

THE IRON AGE

A Review of the Hardware, Iron, Machinery and **es.**

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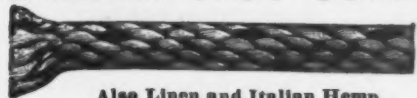


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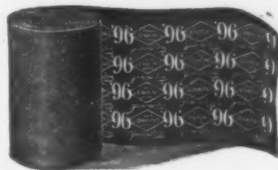
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THE IRON AGE

New York, Thursday, March 8, 1906.

The Lelong Process of Chain Making.

An advance in the art of chain making appears to have been realized in the process patented by Emile Lelong, Brussels, Belgium, by which with one furnace and one machine continuous chain is made and completely finished. It is stated that up to the present time no other system has been able to accomplish this. The process is one that may be used for all sizes and di-

instead of being a transverse one across the link, extends completely around the coil and is so well distributed that even if imperfect in places it is practically impossible for the link to fail.

An important part of the machine is called the cap and is shown at *a* in sectional plan and elevation in Fig. 3. This cap, which rests upon the forging anvil *b*, contains two rollers, one of which, *c*, acts on the inside of the ring in forming it, while the other, *d*, serves as a mold for the outside of the ring. The cap *a* has recesses in its

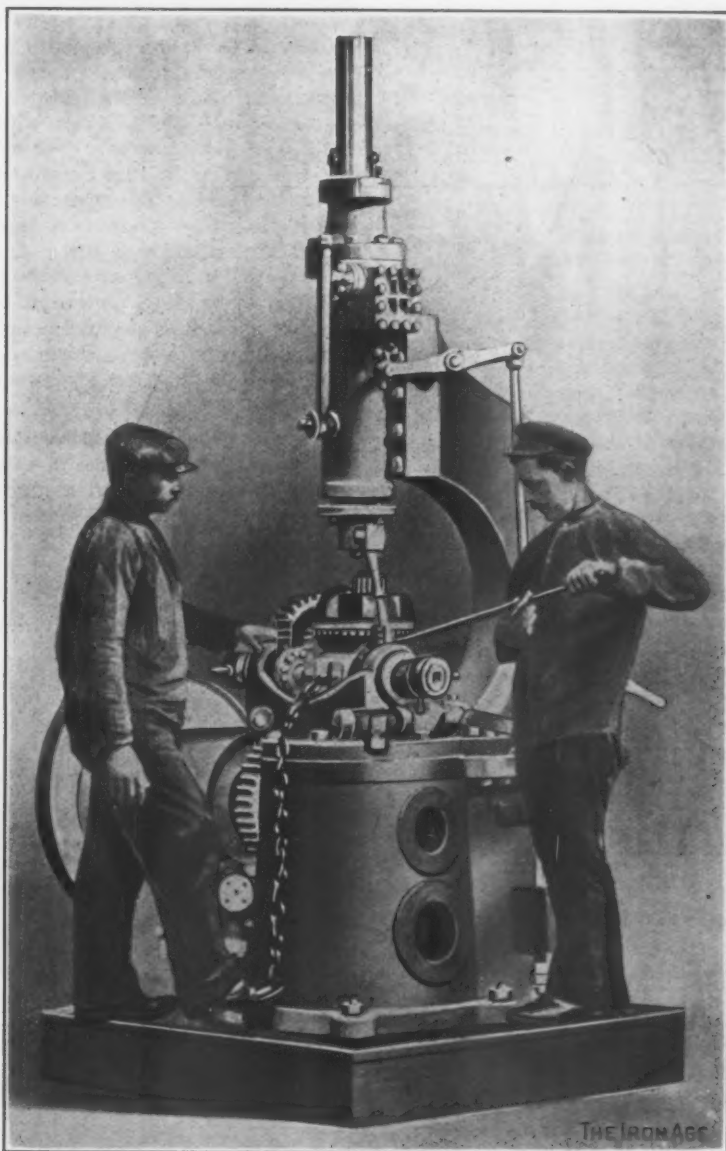


Fig. 1.—The Lelong Chain Making Machine.

ameters, from the smallest tackle up to chains of the largest size used in the navy.

The links of the chain are formed from a straight metal bar, which, previously heated, is put in the trough of the machine, Fig. 1, and is formed into a spiral coil, interlacing with a complete ring. This rough ring after being coiled on the anvil of the forging machine is welded, molded to circular cross section and formed to oval contour without being removed or further heated. The process begins with a square bar scarfed at the ends, Fig. 2, of a size determined by the link required. This bar while hot is introduced into a forming mechanism which reduces it, through the stages indicated, to the rough ring *b*, interlinked with the completed ring *c*. The weld,

lower surface which, when it settles on the anvil, receive the rollers *e*, *f* and *g*, extending up from the anvil. The work is introduced into the cap through the sloping trough *h*, between the rollers *e* and *c*, leading to a circular trough formed by the body of the cap and the different rollers. The cap is hinged, enabling it to be withdrawn, leaving the ring, after it has been formed on the anvil, between the rollers *e*, *f* and *g* to be there welded and molded. At the will of the workman a continuous chain may be made or separate rings.

The half-tone, Fig. 1, gives an idea of the general appearance of the machine, which in this case is supplied with a steam hammer for the welding, operating at about 400 strokes per minute, and shows the two workmen

needed to operate it, one introducing the bar into the trough of the cap and the other manipulating the forging and shaping parts.

A similar machine supplied with an automatic hammer worked by compressed air and capable of making chains varying in diameter from 5-16 to 1 inch is shown in the drawings Fig. 4. It comprises three parts: the pedestal *i*, on which is placed the anvil *b*, containing the mechanism for making the spiral; the support *j*, for the

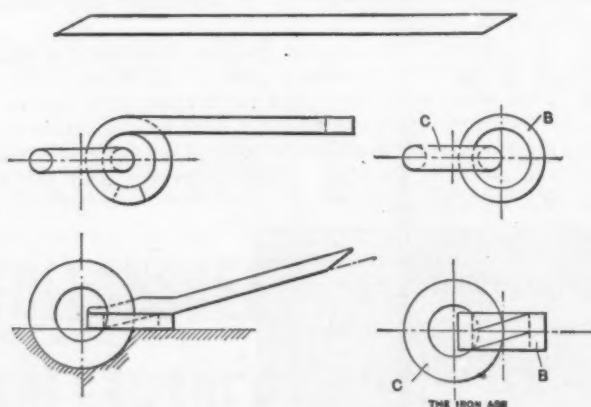


Fig. 2.—The Bar and Plan and Side Views of the Intermediate and Final Stages in the Colling.

hammer of the forge *k*, and the extended base *l*, supporting the outer bearing for the driving shaft carrying the fly wheel *n*, loose pulley *o* and fixed pulley *p*. The gearing in the pedestal drives the three vertical rollers *e*, *f* and *g*, Fig. 3. These rollers may be separated radially and are held in action at the proper time either by the counterweight *q*, Fig. 4, or by the hand lever *r*. The rollers are connected together by links *s*, *t* and *u*, to secure equal displacements of the rollers. Another system of gears drives the rollers contained in the cap.

On top of the bed are two hydraulic cylinders, *v* and *w*, pressure to which is furnished through an accumulator by the pump *x*, which is driven by an eccentric on the outer end of the driving shaft. The hydraulic plungers carry heads or molds, *y* and *z*, of suitable shape and dimensions to hold the links in position while being worked upon and to shape them to the required finished form and size.

When the cap is raised to permit the forging a special mechanism ejects the formed spiral from the trough inclosed by the cap and leaves it in position on the anvil. The detail in Fig. 4 shows the cap in lifted position. For the next operation the hammer is used, a few blows being sufficient to forge and mold the last link. For the sake of clearness the plunger of the forging mechanism is omitted in Fig. 4. It carries a die symmetrical to one on the anvil, both being of proper form to give the welded ring its circular cross section. The chain is next turned through a quarter of a revolution and the last link is held in position to allow the joining of the next new link, while the preceding link is pressed between the jaws of the hydraulic plungers and is shaped to oval form. These operations take place consecutively and completed links are turned out at the rate of two or three a minute.

With the exception of the accumulator the machine is self-contained and requires no separate apparatus or parts. The frame is of cast steel and is of exceptional thickness, not only to enable it to resist the working strain without danger of breaking, but also to give it a sufficient mass to absorb the shocks of the hammer blows and reduce the tendency to weaken the foundations. The weight of the frame alone is half that of the total machine, which in the case of the one illustrated is about 7700 pounds. All of the mechanism is of steel except the hammer, pulleys and fly wheel, which are of cast iron. The parts are all easily accessible for cleaning and repairing and the machine occupies a comparatively small space, about $3\frac{1}{2} \times 5$ feet. The accumulator is a horizontal cylinder, 20 inches in diameter by 60 inches long, and can be located in any convenient corner.

The machines are made in three sizes, the smallest making up to 1-inch chain, the next larger making up to $2\frac{1}{4}$ -inch chain and the largest size making up to 4-inch chain and over. To make the different intermediate sizes that each machine is capable of turning out it is only necessary to replace a few interchangeable parts. It is claimed that by the Lelong process the equal of crane quality chain can be made at less than half the cost of hand made chain.

The German Tariff and Our Customs Administration.

WASHINGTON, D. C., March 6, 1906.—The State Department, having received from the German Government official advices of the action taken suspending until June 30, 1907, the maximum rates of the new German tariff as applied to American products, has proclaimed the extension of the reciprocal arrangement between the United States and Germany, concluded in 1900, under which, in consideration of the assessment of minimum rates on our goods, reduced duties are levied on German argols, brandies, wines and works of art. Coincidentally the Treasury officials are taking steps to redeem the pledges made by this Government in the negotiations with Germany regarding changes in the customs administrative laws and regulations. The concessions made on the part of the United States embrace three modifications of customs regulations which will at once be put into force, not only with respect to the commerce of Germany, but as to the products of all other countries, and two recommendations for amendments to the customs administrative law which Secretary Shaw has already submitted to the Ways and Means Committee.

Amended Customs Regulations.

The changes to be made in customs procedure include the granting of open hearings in reappraisal proceedings under certain conditions; the consultation of in-

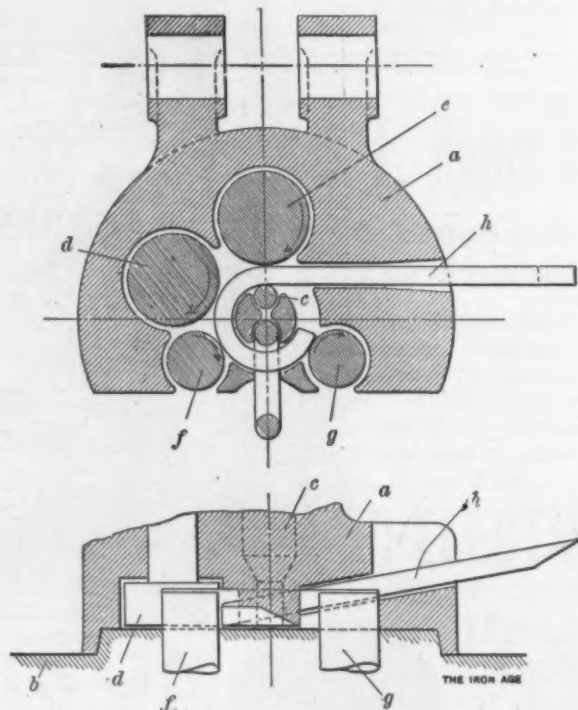


Fig. 3.—Plan and Elevation of the Forming Mechanism, Known as the Cap.

voices in the district of manufacture rather than the district of purchase, and the requirement upon consuls to forward with invoices such reports of local chambers of commerce and other commercial bodies as to values as may be desired by exporters and shippers.

The State Department has begun the framing of instructions to consular officers, with a view to putting the last two innovations into practice. While the concession in the matter of consulating invoices in the district of

manufacture is regarded by German exporters as of much importance the Treasury and State Departments have made it without any reluctance whatever, and it is believed that the new regulation will work to the advantage of both governments, for it is obvious that, especially as to consigned goods, it will be less difficult to obtain accurate values in the district of manufacture than in that of

ernment witnesses to be cross-examined by importers' attorneys.

Proposed Changes in the Law.

The concessions in the way of recommendations for legislation, which were recently submitted to the Ways and Means Committee by Secretary Shaw, are far more important than the modifications that are to be made in customs practice. The most important departure from the provisions of the customs administrative laws is the proposition to give importers of consigned goods the right

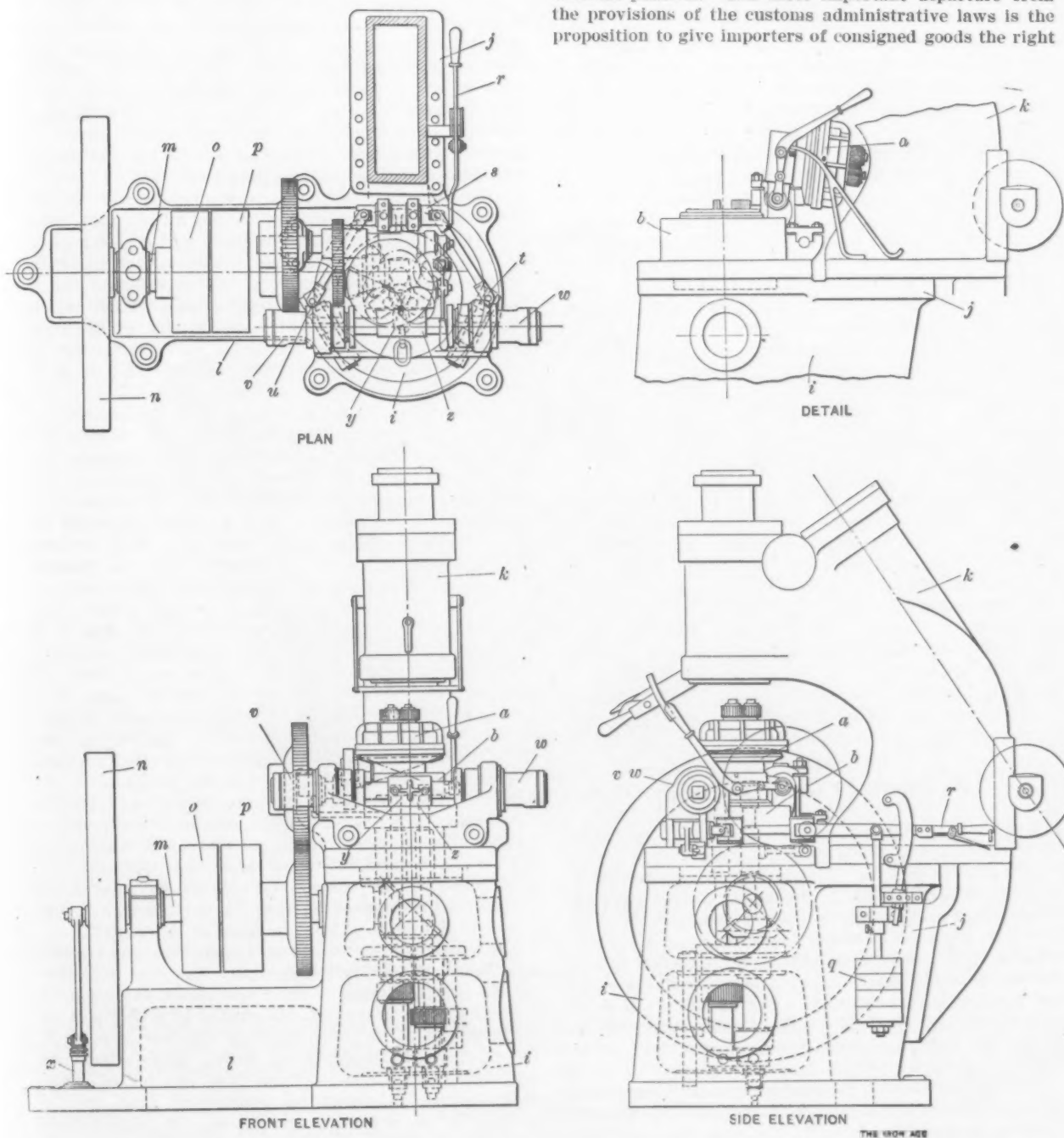


Fig. 4.—Details of a Lelong Machine Capable of Making Chains from 5-16 to 1 Inch in Diameter.

purchase, while exporters will be saved much time and expense.

The decision to instruct consuls to forward reports of local chambers of commerce and other commercial bodies regarding values is rather a matter of courtesy than a substantial concession, for it is not to be expected that the appraising officers will accept these reports as conclusive or as outweighing other consular notations or advices received from customs agents abroad.

The action to be taken by the Treasury Department with regard to open hearings should not be misunderstood. No hard and fast rule will be made. The Board of General Appraisers will be instructed to grant such hearings only in cases where the interests of the United States will not be imperiled thereby, and the board will be the sole judge as to the propriety of permitting Gov-

ernment witnesses to be cross-examined by importers' attorneys. Congress will consider this feature of the Secre-

tary's recommendations very carefully before enacting it into law.

The proposition to provide a margin of 10 per cent. for nonpenalized undervaluations has been safeguarded to some extent in the recommendation made by Secretary Shaw. He suggests that the Secretary of the Treasury be given power to remit penalties on undervaluations of 5 per cent. or less, and that on undervaluations ranging from 5 to 10 per cent. he shall be clothed with the same authority, provided the Board of General Appraisers shall certify that the advance made was due to changed conditions in the foreign market subsequent to the date of purchase. The Secretary also intimated that it might be well to provide in this connection that deductions may be made from invoiced values where the market has declined between the date of purchase and shipment.

Export Prices No Basis for Invoices.

The Treasury Department has felt obliged to decline to grant the important concession asked by the German Government involving the acceptance of export prices, instead of prices for domestic consumption, as the basis of invoice values. Such an innovation, it is believed, would result in an enormous loss of revenue and in the complete demoralization of the customs service. It is a well-known fact that export prices are not only much less than those for domestic consumption, but that they fluctuate violently. The practice of selling for export at low prices has resulted in the adoption by several countries of the so-called "antidumping clause" in new tariffs, under which a surtax is assessed equal to the difference between the domestic price in the country of origin and the price at which the goods in question were sold. In Canada this feature of the law is claimed to have worked extremely well and has served to harden export prices in the United States and other countries shipping largely to the Dominion. To adopt an export price basis for invoice valuations would be a step in the opposite direction from that taken by Canada and other countries that have recently revised their tariffs and administrative regulations and, in the opinion of Treasury officials, would be exceedingly unwise. It goes without saying that, even if the Department should submit such a recommendation, it would be rejected by Congress.

W. L. C.

The Standard Chain Company.

The annual meeting of the stockholders of the Standard Chain Company, Pittsburgh, Pa., was held in Jersey City, N. J., February 20. The old officers were re-elected, consisting of J. C. Schmidt, president; Robert Garland, vice-president; J. T. Davis, general manager; William Robertson, treasurer; Stanley Mann, assistant treasurer, and Arthur E. Crockett, secretary. Mr. Crockett is also assistant general manager, having been appointed to fill that position at this meeting. The directors are J. C. Schmidt, Robert Garland, J. T. Davis, Peter Wertz, Charles A. Painter, Franz Krein, James Hay, F. M. Davis and N. B. Marple.

The capital stock of the Standard Chain Company is \$800,700, of which \$515,700 is preferred and \$285,000 common. A condensed financial statement was submitted at the meeting, showing the condition and operations of the company for the last year, which was regarded as very satisfactory by the stockholders. The company maintains works at Columbus, Ohio; Marion, Ind.; St. Marys, Ohio; Braddock, Pa.; Carlisle, Pa., and York, Pa., two works being operated at the last named place. All these plants, including the rolling mill at Columbus, Ohio, are in full operation, and the outlook for business this year is regarded as very promising.

Exports of steel rails from Belgium have been declining. In 1903 they were 267,152 metric tons; in 1904 they dropped to 174,238 tons and in 1905 to 132,989 tons. Exports of Belgian rails to Brazil in 1905 showed an increase of 5000 tons, and to Chile an increase of 1000 tons over 1904, while to Spain, the Congo, Portugal, Russia and Turkey the increase aggregated 18,000 tons. The principal falling off from 1904 consisted of 10,000 tons to Great Britain, 4000 tons to Canada, 3000 tons to Cape Colony, 2000 tons to Cuba, 3000 tons to United

States, 7000 tons to Italy, 5000 tons to British India, 9000 tons to Mexico, 4000 tons to Holland, 16,000 tons to Argentina and 5000 tons to Sweden.

Some Oliver Iron Mining Company's Large Properties.

DULUTH, March 3, 1906.—Of all the purchases of iron ore tonnage on the Mesaba range by the Oliver Iron Mining Company those of the Chemung and Canisteo seem to have been by far most important. It is a fact that there have been so far but two or three developments on the range that have been proved poorer by final maps than shown from the preliminary and partial developments of original explorations.

The Chemung properties were taken over by the Oliver Iron Mining Company in the fall of 1903, after partial explorations by the original exploring syndicate. At the time of this deal the annual mining minimum under lease was 2 per cent. of the ore in sight, which then amounted to about 70,000,000 tons. There was a provision in the lease that a revaluation of the mine should be made after completion of explorations on various parts of the properties, and the first of these revaluations will come in a short time.

The original owners have maintained explorations on parts of the land for some time and they have added many million tons to the ore in sight. The Monroe, for instance, which was estimated at about 24,000,000 tons when the deal was first made, is now one of the very large mines of the Mesaba, with a tonnage exceeded by that of few properties. On this mine deep drilling showed the ore to extend far beneath what was thought to be the bottom of the basin. The Niles, which was put in on an estimate of small tonnage, is now a very large mine, with ore extending a length of nearly 4000 feet. It is quite probable that when a readjustment of minimums is made there may be an annual output from the Chemung lands of not less than 2,000,000 tons. This Chemung lease is somewhat different from most of those on the Mesaba, as it is non-forfeitable, the leasing company agreeing to take out all the ore in a specified time.

The lease of the Canisteo and the purchase of the Walker lands are similar in some details and provide for a specified percentage of the amount in sight for annual minimum. Explorations are now under way on the Walker purchase to determine the amount that will have to be taken out per annum. On this the payment of the property will be based, so that the deal, though a purchase, is similar to a lease in some of its details.

By reason of its enormous annual ore requirements the United States Steel Corporation has been able during the past few years to make new leases, extensions of those that were to expire in the coming 15 or 20 years, rearrangements of royalties, &c., on a very extensive scale. It has changed practically all its big leases within the past two years. Most of these now run for 50 years, some longer. In return for concessions from the fee owners, in the way of longer leases and no additional royalties, or longer leases and very slight advances in royalty rates, the Oliver Company has agreed to large annual minimums and has several single fee holders from whose lands it is under obligation to take not less than 1,000,000 tons a year. This is true of several tracts located around Eveleth and Hibbing. It is not always on single mines, but from feeholders, who, like W. R. Burt, had leased to the company and its predecessors more than a thousand acres, on which several mines have been discovered. The Burt leases call for 1,000,000 tons a year and so do some of those around Eveleth. In the Burt lands east of Hibbing there are about 40 40-acre tracts, and, in addition to the great mine, from which there is a possibility of nearly 2,000,000 tons the coming season, other large and valuable ore deposits have been found. With all these large leases the Oliver Company has immense annual minimums. But great as these are they do not approach the annual requirements of the corporation even in moderate years, which have enabled the Oliver Company to make most favorable arrangements.

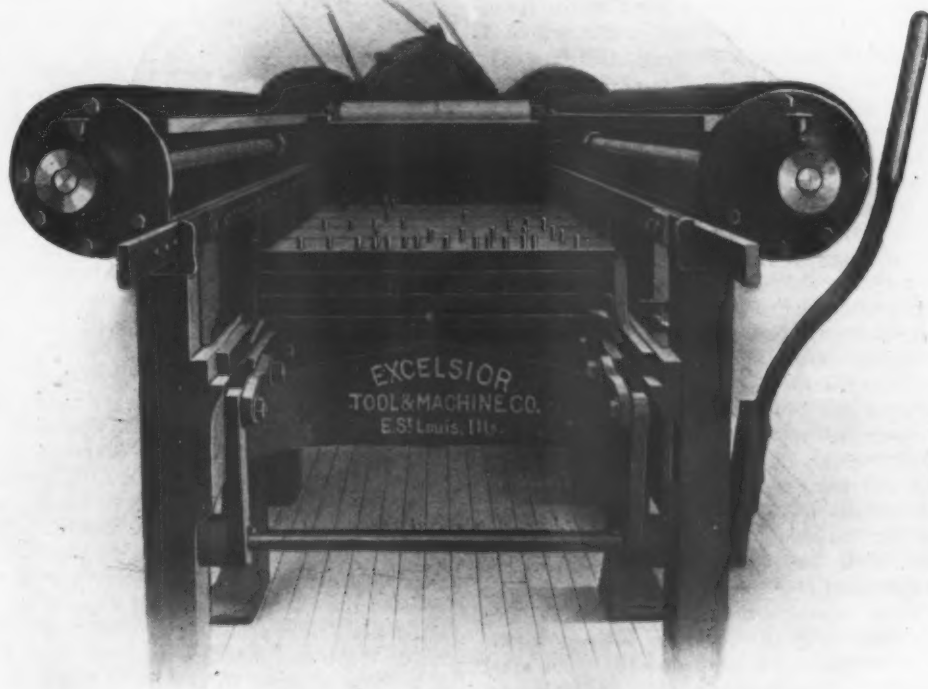
D. E. W.

The Excelsior Automatic Multiple Punching Machine.

Requirements in the manufacture of stoves and ranges were particularly in mind when the machine illustrated was designed, although its usefulness is not limited to that class of work. It may be used for any work where numerous holes are to be punched in regular or irregular arrangement through sheet metal up to No. 14 gauge. While the machine might be classed as a multiple punch it is radically different from machines commonly known by that name in the manner in which the punches are actuated. The punches and dies are independently supported and may be shifted over any part of the bed, according to the pattern to be punched, and are forced through the metal by the passing of a heavy roll over the heads of the punches. The machine is the invention of Theodore F. Philippi, of East St. Louis, Ill.,

revolve the carriage is moved from end to end of the machine. The carriage is guided at the ends, the lower guides holding the roll a definite distance above the bed plate and the upper guides assisting the weight of the roll in depressing the punches. As it is necessary to revolve the screws in opposite directions alternately to reciprocate the roll a reversible drive is provided resembling that commonly used on a planer. From the countershaft there are two driving belts, one open and the other crossed. The active belt runs on a tight pulley on the driving shaft between two loose pulleys. The loose pulleys carry the inactive belt or both belts when the roll is stopped.

In operation, after the punches and dies are set and a piece of work inserted, the lever at the right is thrown backward from its vertical neutral position, which starts the screws, setting the roll in motion, and lowers the stripper plate, allowing the punches to rest on the sheet



The Excelsior Automatic Multiple Punching Machine.

and is manufactured by the Excelsior Tool & Machine Company of the same city. It will take a sheet 32 x 110 inches in area, punching as many holes as can be placed a distance of $\frac{3}{4}$ inch apart.

The essential parts of the machine are a horizontal bed carrying the adjustable dies; a superimposed box of the same dimension as the bed, affording upper and lower guides for the punches, with a space between into which the work is inserted; a stripper plate between the top and bottom sides of the box to withdraw the punches from the work, and a heavy roll operated by power from end to end of the machine, which in transit forces the punches through the work. The die plate and punch holders are made in sections from 8 to 14 inches in width, according to requirements and locations of holes. These sections merely rest upon the bedplate of the machine, but are kept from accidental displacement by side clamps.

The power to travel the roll is applied through a driving shaft carrying a spur gear, which intermeshes with spur gears keyed to the ends of long screws, which are supported in bearings at the sides of the machine, as may be seen in the engraving. The screws work in nuts connected to the roll carriage, so that when the screws

to be punched. When the roll has passed over all of the punches a trip is automatically operated which shifts the active belt so that both belts run on their loose pulleys and the roll is stopped. Simultaneously the stripper plate is raised, lifting the punches clear of the work. The sheet may then be removed from either end and a new one inserted, after which by pulling the lever forward the operation is repeated, with the roll traveling in the opposite direction. The length of the stroke may be changed from 2 feet to 10 feet, according to the length of the sheet. As the dies are in sections, for a different pattern of work it is only necessary to remove, add or shift some of the dies, depending upon the number and positions of the holes.

The machine is guaranteed to punch all the rivet, ventilating and water-back holes in a range body and mark all the bending lines for the brake, absolutely true to pattern, without the use of horseshoe gauges or any marking, in a sheet 32 x 110 inches in less than one minute, and smaller sheets in proportion. With a different set of dies it can cut the openings for ovens, fire boxes or clean-out flues in the same amount of time, all equally true to pattern. Its capacity is given as 300 range bodies per day, with one man and a helper to operate. After an

accurately punched sheet is prepared as a template for each job no skilled labor is required in setting the dies, which are all interchangeable, and additional ones may be ordered at any time. An overhead trolley is furnished with each machine to facilitate the quick and easy handling of the dies. The machine illustrated requires about 3 horse-power to drive it, occupies a floor space of 4 x 12 feet and weighs about 30,000 pounds.

A New Reciprocity Project.

WASHINGTON, D. C., March 5, 1906.—After a conference with the Secretary of State Representative Curtis of Kansas, a prominent member of the Ways and Means Committee, has introduced a bill in the House designed to provide a new basis for the negotiation of reciprocity treaties with the leading commercial countries. His proposition in its basic principle is an important departure from any legislative measure looking to the negotiation of reciprocal trade agreements that has ever been brought forward.

Mr. Curtis has reached the conclusion that Congress can delegate to the President of the United States much broader powers for the formulation and proclamation of reciprocity agreements than have been embodied in either section 3 or 4 of the Dingley act, or were embraced in the reciprocity provisions of the McKinley law. Section 3 of the Dingley act authorizes the President to conclude and proclaim treaties making certain specified reductions in the duties on argols, brandies, wines and works of art "whenever the Government of any country or colony producing and exporting to the United States the above mentioned articles or any of them shall enter into a commercial agreement with the United States or make concessions in favor of the products or manufactures thereof, which in the judgment of the President shall be reciprocal and equivalent." Treaties so framed do not require to be ratified by the Senate or "approved by Congress." Section 4 authorizes the President for adequate reciprocal concessions to reduce to the extent of not more than 20 per cent. the duties on any goods imported from any foreign country, but treaties so framed must be "duly ratified by the Senate and approved by Congress and public proclamation made accordingly." The difference between the provisions of the two sections, it will be noted, is that in the first case the President may proclaim immediately treaties in which the concessions made have been specifically authorized by Congress, both as to the amount of the reduction in the rates and the items upon which the reductions are to be made, while in the second case the reductions may be made upon any item and of any amount up to 20 per cent., but such treaties must be ratified by the Senate and approved by Congress.

Under these provisions it has been found impossible to secure the ratification of important treaties, and more than a dozen conventions with leading foreign countries have been allowed to die on the Senate calendar without action. The impossibility of securing the ratification of a comprehensive reciprocity convention with Germany under section 4 of the Dingley act is what has forced the Secretary of State into negotiating a *modus vivendi* under the terms of which Germany has agreed to suspend the application of the maximum rates of its new tariff to American products.

Mr. Curtis' Bill.

After some investigation of the subject Mr. Curtis has reached the conclusion that it is practicable to combine the principles underlying sections 3 and 4 of the Dingley act and to empower the President to proclaim treaties without referring them to Congress, provided the concessions made do not exceed the authorized limit of reduction, which in his bill he fixes at 20 per cent. The measure as presented in the House by Mr. Curtis is as follows:

That the President of the United States be and he is hereby authorized, with a view to securing reciprocal trade with foreign countries, to enter into commercial agreements with any other country or countries concerning the admission into any such country or countries of the products of the United States and their use and disposition therein deemed to be for the interest of the United States, and in agreement or agreements in

consideration of the advantage accruing to the United States therefrom, shall provide for the reduction during a specified period, not exceeding five years, of the duties imposed in an act entitled "An Act to Provide Revenue for the Government and to Encourage the Industries of the United States," approved July 24, 1897, to the extent of not more than 20 per centum thereof upon such goods, wares or merchandise as may be designated therein of the country or countries with which such agreement or agreements shall be made as herein provided, or shall provide for the transfer during such period from the dutiable list of said act to the free list thereof of such goods, wares and merchandise, being the natural products of such foreign country or countries and not of the United States, or shall provide for the retention upon the free list of said act during a specified period, not exceeding five years, of such goods, wares and merchandise now included in said free list as may be designated therein, and when any such agreement shall have been entered into and public proclamation made thereof then and thereafter the duties which shall be collected by the United States upon any of the designated goods, wares, merchandise and products from the foreign country with which such agreement has been made shall during the period provided for be the duties specified and provided for in such agreement and none other.

Constitutionality Questioned.

It is only fair to state that the tariff leaders of the House and Senate are of two minds as to the constitutionality of Mr. Curtis' bill. An examination of the decisions of the United States Supreme Court in the so-called Blaine reciprocity cases has convinced some of them that the Curtis plan is not practicable. In those cases the court held that the Blaine treaties were constitutional for the reason that the concessions made therein were limited to the reductions which the President was specifically authorized to make by the terms of the McKinley act. In the exercise of the power thus conferred the President discharged a purely ministerial duty. In the first place he ascertained that the foreign Governments in question had made certain concessions on American products, such as were contemplated by the McKinley act, and he thereupon authorized the customs officials to collect on the products of those countries the reduced rates specified in the reciprocity section of the tariff law. The operation of the McKinley act in this regard was automatic and the President exercised no discretion whatever beyond selecting the countries with which were made the treaties authorized by Congress.

Mr. Curtis is not disposed to insist that he has discovered a safe path out of the present reciprocity tangle, but he believes he has at least put forward a proposition that will attract general attention and that will serve to develop the views of the tariff experts of both houses of Congress. It is probable that his bill will be discussed in the Ways and Means Committee at an early date, and it may be referred to the State Department for an expression of opinion.

W. L. C.

Reported New Steel Plant at Youngstown.—For some time plans have been under way by some of the leading blast furnace interests at Youngstown, Ohio, to build either a Bessemer or open hearth steel plant for the purpose of supplying sheet and tin bars to independent mills. While the project is yet in an embryotic condition it gives promise of materializing before very long. The Ohio Iron & Steel Company, which operates Mary furnace at Lowellville, Ohio, has bought 60 acres of ground adjoining its furnace and it is understood that this ground will be used for building a steel plant, providing plans now under way go through.

In the annual report of the Pennsylvania Railroad published in the past week President Cassatt referred to the plans for a double track railroad between Pittsburgh, Philadelphia and New York, entirely independent of the present four-track road. The preliminary estimates call for an expenditure of \$30,000,000 and two years will be required for the work. The two additional tracks will not be laid on a section of about 96 miles on the Middle Division and on a short section between Parkesburg and Thorndale on the Philadelphia Division, as the low grades on those divisions will admit of heavy trains, and therefore a smaller number of trains. The additional system will comprise 480 miles of line, of which 184 miles are virtually completed.

The Revision of the Canadian Tariff.*

Strong Pleas for Bounties for Canadian Shipbuilders.

In October last, as briefly stated in a previous article, when the Tariff Commission was at Victoria, British Columbia, steel shipbuilders on the Pacific Coast petitioned for bounties at the rate of \$10 a ton and expressed their willingness if these bounties were granted to buy their steel from eastern Canada. It was then agreed by the shipbuilders that there should be a conference with shipbuilders on the Great Lakes and on the Atlantic Coast and that a more detailed scheme should be submitted to the commission at a later stage of its inquiries.

Municipalities and Trade Organizations Favor Bounties.

The shipbuilders' case came up in its final shape at Halifax, at the last sitting in the tour of the commissioners, when James A. Johnston appeared as the representative of the city council of Halifax and the Halifax Board of Trade. He stated that the shipbuilders were now agreed that a bounty of \$6 a ton would be sufficient. As regards shipbuilding at Halifax the municipalities of Halifax and Dartmouth had been in consultation with Mr. Hunter of the shipbuilding firm of Swan & Hunter, Newcastle. Mr. Hunter had gone over the ground and he had pointed out an excellent site on the Dartmouth side of the harbor for a steel shipbuilding yard. Further than this Mr. Hunter had promised to invest in the industry; but he had told them that the industry could not be established with anything less than a \$6 bounty.

The Polson Shipbuilding Company of Toronto, Mr. Johnston further stated, is to-day the only successful steel shipbuilding concern in Canada. Mr. Bertram, who supported the plea for bounties, was certain that in a short time Nova Scotia mechanics would become proficient in the construction of steel ships. Mr. De Wolf, another representative of the Halifax interests, pressed the commission for an immediate decision. He recalled the fact that Canadian shipbuilders had agreed on a \$6 bounty nearly a year ago; that they had laid their case before Mr. Fielding, the Minister of Finance, at Ottawa; and he said that they had hoped that some progress would have been made with the scheme long before this time.

Mr. Johnston had stated that if the Dominion Government would help the industry the city of Halifax would grant a bonus of \$100,000, the city of Dartmouth would grant a bonus of \$100,000 and the Provincial Government would be prepared with a bonus of \$100,000. Mr. De Wolf urged that if there were no hope of anything being done by the Government the people who are interested in shipbuilding should be notified, that they might abandon the project. They were tired, he added, of the suspense. As proof of the shortage of Canadian tonnage Mr. De Wolf stated that the Algoma Steel Company, at Sault Ste. Marie, handled 800,000 tons of freight a year on the lakes, and 75 per cent. of this business went to American steamers, because there were no British steamers available. A large proportion of the coal trade between Sydney and Quebec, Montreal, Halifax and St. John is also carried in Norwegian steamers.

Free Raw Material Not Sufficient Help.

Mr. Paterson inquired whether if shipbuilding material were put on the free list that would meet the case? Mr. De Wolf answered that it would not be sufficient. Labor is dearer in Canada than in Great Britain; and, moreover, it would have to be trained. The bonus they asked was \$6 per registered ton; and they urged that there should be a guarantee that the bounty should be continued for ten years. At the end of that time it was felt that the shipping industry in Canada would be self-sustaining.

George S. Campbell, another advocate of shipbuilding bounties, reminded the commission that there is no trade so highly specialized as shipbuilding. Consequently it has to be done on a large scale, and the industry required a large amount of capital. In Great Britain shipbuilding has been brought to such a state of perfection that shipbuilders in Canada could not begin to compete with British shipbuilders without Government assistance. In Germany, France, Austria and Russia the Governments have been compelled to give aid to shipbuilders, in order that those countries might have mercantile marines of their own; and more recently Japan has granted bounties, ranging from \$6 to \$12 per gross ton. Canada, Mr. Campbell continued, has a larger coasting trade than any other country in the world; yet every year a larger proportion of it is going into foreign hands. The coal trade of the St. Lawrence is now going chiefly to Norwegian vessels, because these ships can be built and manned cheaper than British or Canadian vessels, and the money earned by these vessels is all carried away to Norway.

Want Foreign Vessels Excluded from Coastwise Trade.

W. A. Johnston stated that the coal companies of Nova Scotia, as well as the Dominion Iron and Steel Company, which imports its ore from Wabana Island, Newfoundland, all charter Norwegian steamers on time charters at cheaper rates than Canadian steamers can afford to work for. If these Norwegian ships were excluded from the coastwise trade the coal and steel companies would be compelled to buy ships or to build ships of their own or to charter British ships, which pay better wages to their sailors and buy their supplies at Canadian ports. He cited the working of the coastwise navigation law in the United States, which absolutely restricts the coastwise trade to American built ships, and he told the commission that he wanted a law under which no foreign ships would be allowed to trade between Canadian ports.

B. Pierson, a member of the Nova Scotia Legislature, urged that nothing less than \$6 a ton as bounty would suffice. Indeed, Mr. Hunter had told them that \$6 would be scarcely sufficient. Six dollars a ton, Mr. Pierson reminded the commission, would represent a duty of from 12½ to 15 per cent., as the cost of building ships in England had been put at £8 a ton. "Suppose," said Mr. Paterson, "we say that the bounty shall not exceed a duty of 15 per cent." This was the only comment from the commissioners indicating any line of action.

When the commission was at St. John, January 8, a strong plea was made for shipping bounties, but no scheme for municipal or provincial bonuses was there discussed, such as was submitted to the commission at Halifax. It is beyond question that the Dartmouth side of Halifax Harbor is admirably adapted for shipyards or for any other industry requiring a frontage on sheltered deep water.

The Structural Steel Duty.

Structural steel was one of the subjects which came up at the final session in Ottawa when the Dominion Bridge Company, the Hamilton Bridge Company, the Canadian Bridge Company, the Canada Foundry Company and the Phoenix Iron Works all joined in a memorial in which it was urged that the duty on structural metal work should be specific instead of ad valorem and that in the revision of the tariff duty on bridges and structural metal work should be made \$20 per ton, which would correspond to the present rate of 35 per cent. on material valued at \$2.86 per 100 pounds. It was insisted that the change was necessary by reason of the American competition, as American bridge builders sell in Canada below cost at every recurring period of depression. It

* Continued from page 668, February 22.

was also asked that the duty on small structural parts, now 35 per cent., be reduced to 10 per cent. The present duty is prohibitive and if it were reduced to 10 per cent. there would be a great increase in the use of small parts and consequently an increased demand for much of the structural work which the petitioning companies are equipped to make. It was added that \$5,500,000 are now invested in these Canadian structural plants, and that they have a capacity of 100,000 tons of finished material, which at present is in excess of the requirements of the Dominion.

Prospective Tin Plate Makers Ask Protection.

The most numerous supported petition presented to the commission was in the interest of the Canada Tin Plate & Steel Sheet Company, which is now installing a plant at Morrisburg, Ont., for the manufacture of tin,terne, Canada and black plates, plain and galvanized sheets and steel sheets for enameled ware and electrical machinery.

It was pleaded for the Morrisburg Company that it was engaged in an infant industry and protection at the rate of 33 1-3 per cent. ad valorem was asked against all comers. The petitioners said:

It has been the wise policy of the Canadian Parliament and the Government to foster and assist other branches of the iron and steel industry, particularly in the early stages of their career. As this is one of the most important units of that great industry and there is no reason why, with reasonable assistance, it should not attain to large proportions in Canada, we venture to hope that our request will receive favorable consideration from the commission. It is conceded that South Wales has long been regarded as the home of the tin plate industry, but as a matter of fact Wales has no special claims to the industry which cannot be equally well advanced for Canada, other than the fact that it has existed there for the last hundred years. Wales has no advantage over Canada in procuring tin and palm oil; and as to the question of steel, it is well known that the Welshman, whether because he cannot procure sufficient quantities of steel at home or because the home made article is too dear, imports a very large proportion of the steel used from Belgium, Germany and the United States. The main advantage the Welshman has in the manufacture of tin plate, and the only *raison d'être* for his successful competition, is that his labor cost is so low. The skilled workman in the tin plate business in the United States is paid about 100 per cent. more than in Wales; yet notwithstanding this fact the selling prices of tin plate in the United States, the home of protection, and in Wales, the home of free trade, are, according to recent quotations in *The Iron Age* of New York, almost the same, thus proving conclusively that steel and the other raw materials entering into the manufacture of tin plate can be purchased more cheaply in the United States than in Wales; also proving conclusively that, given the same labor conditions in each country, Wales would be totally unable to compete with the United States.

It was further insisted that the manufacture of tin plate is as natural an industry to Canada as that of steel rails, "and much more so," it was added, "than cotton." In answer to objections which have been raised everywhere on the commissioners' tour to this request of the Morrisburg company, figures were quoted to show that as the result of the high protection afforded in the American tariff to the tin plate industry, the price per box of 100 pounds at New York decreased from \$4.91 in 1892 to \$3.56 in 1904. Prof. F. L. McVay of the University of Minnesota was also quoted as having said that, "taken all in all, the development of the tin plate industry of the United States is a remarkable example of timely protection."

The commissioners were told that the plant at Morrisburg would be the most modern tin plate factory in the world. As no tin plate manufactory now exists in Canada, the labor, the petitioners explained, "will largely have to be obtained from abroad, and many applications for positions from skilled workmen now living in Wales and in the United States have already been received, and the advent of these men will be a distinct advantage to the community in which they settle."

"That the Morrisburg factory will be of great advantage to Canada," the petitioners proceeded, "no one can deny. But at the same time they recognize that there are many difficulties to overcome. The best skilled labor will have to be imported at high wages. Arrangements will have to be made for a supply of the requisite steel bars, and at first higher prices will have to be paid for them. Losses incidental to all such new enterprises caused by inferior material or by mistakes in the proper

blending of them will have to be endured. Prejudice against new and home made goods will have to be overcome, and fierce competition from old established firms in South Wales who will not willingly lose the Canadian market will have to be met."

It should be added that this Morrisburg concern has already received a bonus from the municipality, and earlier than this petition to the tariff commission it petitioned the Department of Railways and Canals to grant it the use of free water from one of the Government canals.

The Preservation of Niagara Falls.

Valuable information in regard to Niagara power development is contained in the twentieth annual report of the Commissioners of Victoria Park, Niagara Falls, Canada. The report presents an exhaustive review of the position of affairs in connection with the development of electrical power and the effect of the withdrawal of the necessary water upon the appearance of the cataract. It is stated that the total amount of water required for the full operation of the hydro electric works now completed or in process of construction will necessitate the withdrawal of 23 per cent. of the present flow over the Canadian and American falls, but that in all probability many years will elapse before the maximum amount will be required, as the withdrawals will be made very gradually. On the whole, the trend of opinion expressed in the report is to the effect that the power development now in progress will not detract from the beauty of the falls to any great degree.

However, the commissioners see a source of danger to the cataract in the ten companies chartered that have not commenced work, four of which are on the Canadian side and six on the American side of the river. For this reason they offer the following suggestions:

1. That the whole subject involving the further diversion of water from the Niagara River for power development in excess of the charters now being exercised be referred to an international commission appointed by the Governments directly interested, territorially or otherwise, in order that an agreement may be arrived at between such Governments as to further withdrawals of water on both sides of the river.

2. That a careful inquiry be made by the Governments indicated respecting the charters already granted but in regard to which no works whatever have been commenced, with a view to their cancellation.

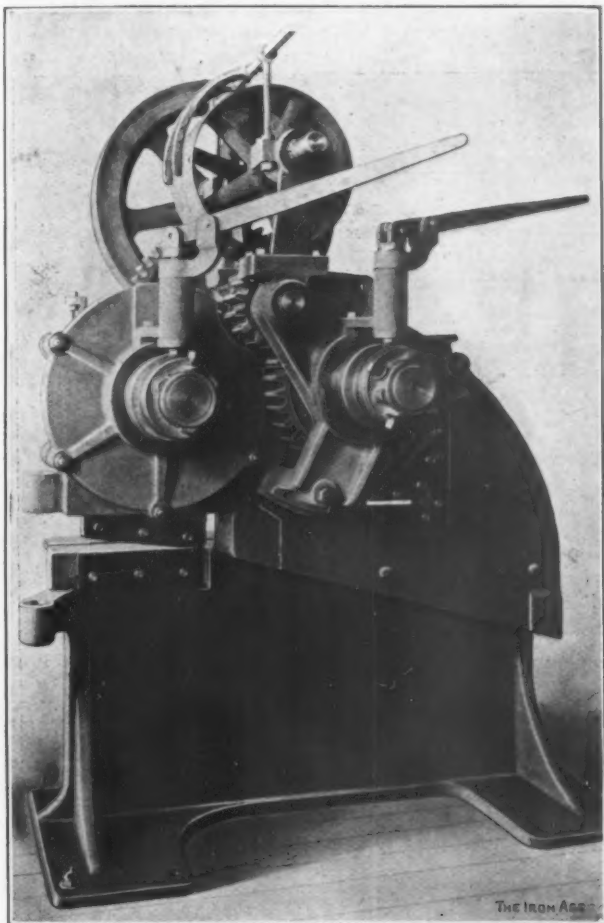
The Quincy, Manchester, Sargent Company, Old Colony Building, Chicago, and 114 Liberty street, New York, has been incorporated and has taken over the business heretofore operated by the Railway Appliances Company. This includes the business and plant of the Railway Appliances Company at Chicago Heights, Ill., formerly owned by the Q and C Company, also the business and plant of the Pedrick & Ayer Company, Plainfield, N. J., manufacturer of locomotive repair tools, electric and pneumatic hoists and cranes and pneumatic riveters. The Quincy, Manchester, Sargent Company will also act as sole selling agent for the product of the Elastic Nut & Bolt Company, Milwaukee, Wis. C. F. Quincy is president; George H. Sargent, vice-president, and Percival Manchester, secretary-treasurer.

The Bureau of Manufactures, Department of Commerce and Labor, expresses the opinion, based on the reports coming from consuls and others, that "the manufacturers of the United States might find profitable markets in Central and South America for hundreds of articles that are made in this country cheaper, better and more artistically than in any other country in the world. Special reference has been made in numerous reports as to the desire and demand for railroad, water works, sewer, tramway, electric lighting, power and other plants. If expert agents were sent out by combinations of firms they might be able to locate agencies and establish regular sales."

The Wais Duplex Shear.

A newly designed universal shear for cutting plates, bars and angles of equal or unequal legs is shown in the accompanying illustration. With extra shear knives of proper form the machine may also be used for cutting channels and it may also be used as a punching machine. As may readily be seen the tool should be an especially useful one to boiler makers, sheet iron workers and architectural iron workers. It was designed and is built by C. Wais, Cincinnati, manufacturer of punching, shearing and special metal working machinery.

The engraving shows a view of the left or operating side of the machine. At the front is the plate splitting



A Combination Plate and Angle Shear, Built by C. Wais, Cincinnati, Ohio.

shear, and at the opening in the side is the angle shear, which cuts angles of equal or unequal legs, making the ends square or of any angle between 45 and 90 degrees. The angle shear is a feature upon which one of the special claims for the machine is based, inasmuch as the cutting of angles with unequal legs has always proved difficult, usually necessitating independent or large double combination shears, which are too costly for the average small manufacturer to install. Both shears are driven from one driving shaft mounted at the top and carrying a tight and a loose pulley and a fly wheel. The plate shear reciprocates vertically and the angle shear at an angle of 45 degrees. The shears are put in operation by the engaging of clutches and may be operated independently or both at the same time. Each clutch releases only at the highest point of the stroke, and at the same time the corresponding controlling lever takes its upper position. The clutch levers have their fulcrums in brackets swinging about a vertical axis, so that they may be turned to any angle in a horizontal circle to suit the convenience of the operator.

The machine is compactly designed so as to require only a comparatively small amount of space and is claimed to be very strongly geared. Wherever the gears would be a menace to the operator they are protected. The gear on the plate shearing shaft is covered by a cas-

ing which also affords a bearing for that shaft. The Wais duplex shearing machine has been intentionally designed to sell at a moderate price to place it within the reach of small manufacturers. The size illustrated weighs about 6000 pounds, occupies a floor space of 4 feet 10 inches by 4 feet, and stands 7 feet 4 inches high. It will cut $\frac{3}{8}$ -inch plates, trim $\frac{1}{2}$ -inch and will cut $\frac{3}{8}$ -inch angles with 4 x 4 or 5 x 3 inch legs. A heavier machine is also built, weighing 9000 pounds, which will cut $\frac{1}{2}$ -inch plates, trim $\frac{5}{8}$ -inch and cut $\frac{3}{8}$ -inch angles with 6 x 6 or 6 x 4 inch legs.

Molders' Patterns Free of Duty.

In an opinion by Judge Lacombe the United States Circuit Court of Appeals at New York handed down a decision February 27 sustaining the contention of R. Hoe & Co., New York, for the free entry of so-called molders' patterns. The litigation over the patterns had its beginning in the latter part of 1904 and was successively contested before the Board of United States General Appraisers, the Federal Circuit Court and the appellate tribunal. As the case stands at the present time the advantage is clearly with Hoe & Co., as the firm won before both courts, while the Board of Appraisers was not unanimous in its decision. The lower customs tribunal in a majority decision sustained the action of the collector in returning the patterns for duty at the rate of 35 per cent. under the provision in the tariff law for "manufactures of wood." Judge Somerville, however, another member of the general board, filed a dissenting opinion in which he upheld the claim of the importers for exemption. While the Circuit Court of Appeals filed no formal decision, Judge Lacombe states that the court makes as its own opinion Judge Somerville's dissenting opinion filed when the case was before the board.

It is known that the finding of the appellate court is a matter of much disappointment to officials connected with the Treasury Department as well as to the Pattern Makers' Association of America, which had employed eminent counsel to assist the Government in its fight for a heavy duty. Considerable mystery surrounds the Hoe case owing to the Treasury's abrupt action in departing from the practice of many years during which patterns similar to those of the importers concerned were admitted free. In this case Collector Stranahan received direct instructions from the Secretary of the Treasury to levy a 35 per cent. duty on the patterns. Since that time all importations of patterns have been assessed, with the result that many firms will receive refunds if Hoe & Co. are ultimately successful in the suit.

The Supreme Court to Be Appealed To.

Representatives of the Treasury and of the Pattern Makers' Association have stated to the representative of *The Iron Age* that the Supreme Court will be asked to grant a writ of certiorari in order that the verdict of the Court of Appeals may be reviewed. Ordinarily the court of last resort would be averse to considering the pattern case when both of the lower tribunals had found in favor of the litigant. It is anticipated, therefore, that the Government will seek to impress the court with the importance of the issue and the desirability of having the tariff schedules interpreted by the highest court.

Judge Somerville held that the words "patterns for machinery," used in paragraph 616 of the free list, have no technical or commercial designation different from the ordinary one, and therefore include iron molders' patterns made of wood designed to be used in casting patterns for machinery. Throughout the litigation the Treasury Department has insisted that the articles are not within the provision in the tariff law for "models of inventions and of other improvements in the arts, including patterns for machinery." According to the Government's contention the expression "patterns for machinery" in paragraph 616 includes only those articles known in trade as "model patterns," which are exact reproductions, both as to form and size, of the thing to be made, and designed to convey the inventor's idea to the machinist or pattern maker, and not, like molders' patterns, to be used as instruments or tools in the practical operation of manufacturing the machine.

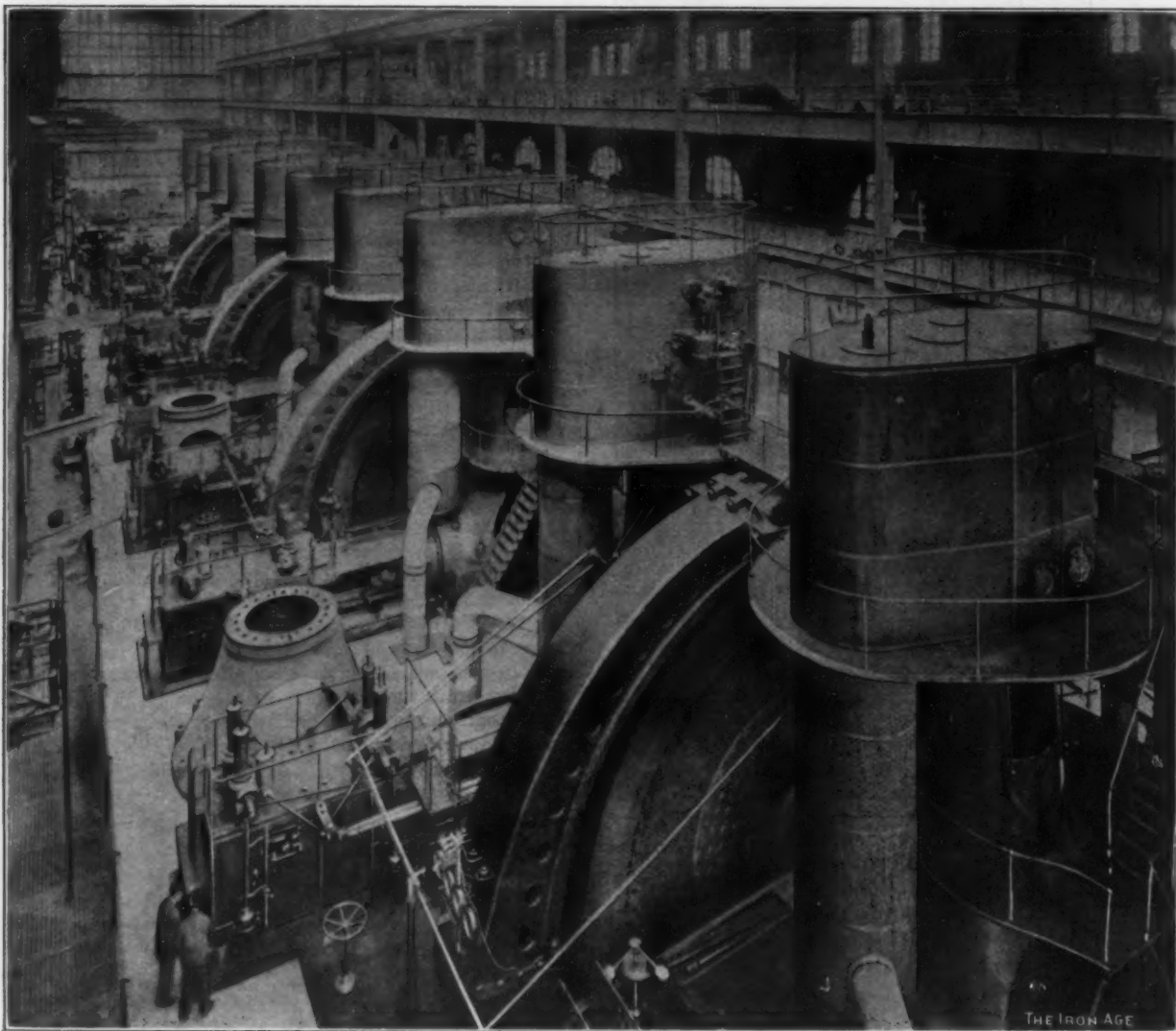
Test of Engines in New York Subway Power Plant.

An interesting official 15-hour test was recently made of one of the nine twin vertical horizontal Reynolds-Corliss engines in the Fifty-ninth street station of the Interborough Rapid Transit Company, New York City. The accompanying half-tone is a view in this plant showing five of these engines, which have cylinders 42 and 86 x 60 inches and supply current for power and lighting in the subway. The tests were conducted by the Interborough Company and representatives of the Allis-Chalmers Company, Milwaukee, Wis., as a final determination of the fulfillment of the builder's guarantee and as provided in the original contracts.

The engine tested was known as No. 8, and was selected as representative of all of the engines installed.

being 417.3 kw., making the total load 5496.5 kw., or 7365.3 indicated horse-power; the average speed, 75.02 revolutions per minute; the average steam pressure, 175.18 pounds, and the average vacuum, 26.02 inches. The final results allow for boiler leakage, which was determined by a separate test of 24 hours' duration. The steam was purposely very slightly superheated during the test, its average quality being 100.28 per cent., since it was easier to make allowance for than wet steam, and a correction was made reducing the superheated steam to equivalent dry saturated steam.

The actual vacuum reading of 26.02 inches was obtained when the barometer reading was 30.5 inches, so that the equivalent vacuum referred to a barometer of 30 inches was only 25.52 inches. Other tests at varying vacua show that if the vacuum had been carried enough higher to correspond to 30 inches barometer the steam



Five of the 42 and 86 x 60 Inch Twin Vertical Horizontal Reynolds-Corliss Engines in the Fifty-ninth Street Power House of the Interborough Rapid Transit Company, New York City.

On account of the difficulty of keeping a constant load it was agreed to determine the power by the readings of tested integrating wattmeters. These readings were reduced to indicated horse-power by running the generator as a synchronous motor, to obtain the friction load of the engine and generator running idle or with no load. Adding this electrical input to the switchboard reading when developing power it was possible to obtain the power developed at all loads.

The result of the test under conditions approximating the contract requirements of 7500 horse-power, 75 revolutions per minute, 175 pounds steam pressure and 26 inches vacuum was a consumption of 11.96 pounds of dry saturated steam per indicated horse-power hour, or well within the company's guarantee of 12.25 pounds. The steam consumption per kilowatt hour at the switchboard was 17.34 pounds. The actual average conditions were a net load of 5079.2 kw., the friction and generator losses

consumption would have been about 0.09 pound better, or 11.87 pounds per indicated horse-power hour instead of the official figure of 11.96 pounds.

The tests were under the supervision of Frank N. Waterman, who acted as referee. The following represented the Interborough Rapid Transit Company: H. G. Scott, superintendent of motive power; J. Van Vleck, mechanical engineer; H. W. Butler, principal assistant engineer; Thomas Allsop, mechanical engineer of the Fifty-ninth street power station; C. W. Ricker, electrical superintendent; G. F. Chellis, instrument man; W. L. Seabrooke and W. S. Finlay, assistant engineers. The Allis-Chalmers Company was represented by A. M. Mat-tice, chief engineer; Samuel Moore, district superintendent of erection; T. T. Hubbard, engineer of tests; J. W. Lord, sales representative; C. A. Hoppen and C. J. Larsen, construction department; A. F. Rolf and F. Buch, electrical representatives.

Methods of Driving Rolling Mills.

In a recent issue of *Stahl und Eisen* a German engineer, Ortmann, contributes an interesting discussion of methods of driving rolling mills, of which an abstract is herewith given, accompanied by other views of the subject taken from the same journal.

The Ortmann Discussion.

The chief advantage of the steam engine, as compared with the electric motor or gas engine, for driving rolling mills is the facility with which it adapts itself to the load, responding almost instantaneously to a decrease in the speed of the fly wheel with more power and quickly regaining the normal number of revolutions. This is rendered possible by the fact that an engine built for a certain load is capable of exceeding it to the extent of 50 per cent. or more. The main disadvantage of this form of power is the high operating cost, and it is on this account that so many attempts have been made to replace it by the electric motor and more recently still, the gas engine. The question is, Which of these two motors offers the greater advantages, not only from an economical point of view, but also, what is frequently of more importance, in regard to the maximum security of operation?

SUPPLY OF CURRENT AN IMPORTANT POINT.

For electric driving the first point to be considered is whether a sufficiently large power station is available or whether the current must be specially generated for one or two mills. This is of importance because, on account of the variations in load, the station will at times be drawn upon very heavily and the amount of power used may easily exceed its capacity, while at other times the requirements are very small. If the central station is merely sufficient for operating one or two mills this variation will prove very inconvenient. The trouble could be overcome by the introduction of a fly wheel transformer or a secondary battery, and electricians would say that the solution of this problem is not at all difficult. From a technical standpoint this is true, but from an economical point of view it is a question whether such an installation would not be too expensive. A power house with a transformer is a costly installation and could only be of advantage if the generators were run by gas engines using blast furnace gas. A steam driven central station would be out of the question on account of the high operating cost. If steam engines were used it would be better to couple them directly to the mill, providing the steam line were not too long. If a large station with a capacity of 10,000 to 20,000 horse-power is available the variations in load will not be of so much importance, as the percentage of overload caused by the variation of power required in the mill will be much less.

REVERSING MILLS CONSIDERED.

In reversing mills the load varies still more than in those provided with a fly wheel, and for such it would probably be impossible to dispense with the transformer. In recent years comparisons have often been made between such mills and the large hoisting engines used in mines. This comparison may easily lead to wrong conclusions, owing to the fact that in the two cases the effects of the moving mass are totally different. The inertia of this mass is, in the case of the hoisting engine, of supreme importance, as the cages, ropes, drums and counterweights of a mine hoist for $4\frac{1}{2}$ tons net load will weigh in the neighborhood of 90 or 100 tons. The whole is brought quickly to its maximum speed and after maintaining this for a short time, it is as quickly brought to a standstill. The total friction, that of the journals and that due to the inflexibility of the cable, is comparatively small, and in order to stop the machine it is not sufficient simply to shut off the power, but an effective brake must also be used. It is, therefore, in this case perfectly correct to brake electrically, storing up the energy generated by means of a fly wheel transformer in order to utilize it subsequently.

Such a storage of power is, however, useless in a reversing mills, which has comparatively such small moving parts that their inertia is negligible. This will be seen

at once by comparison of the weights of the rolls, couplings, pinions, &c., and the distance from their axis of rotation with the size of the numerous friction surfaces. As a result, when the power is cut off the mill will come to a standstill almost immediately, so that it is only necessary to equalize the variations in load between zero and the maximum, for which purpose a fly wheel transformer could be used. Here again the question arises, however, whether the power station is of sufficient capacity and whether it is driven by gas engines using blast furnace gas. If the latter is the case the gas should not, as electricians often assert, be figured as a waste product, but charged to the mill at its heat value, for in most plants steam is used for one purpose or another, and this, if sufficient gas is not available, must be generated by means of coal. An electric power station with fly wheel transformer and all accessories would probably cost twice or three times as much as a complete plant for direct driving by means of a steam engine.

REVERSING ENGINES NOT SO WASTEFUL AS SUPPOSED.

Reversing engines are not nearly so wasteful as is often supposed, the consumption of steam being, in many cases, lower than that of a compound condensing fly wheel engine of the same size. This is due to the fact that such an engine never runs when the mill is idle, which would not be the case with electric driving, as the power station would hardly be stopped for a shutdown of ten or fifteen minutes or even half an hour. With a power station driven by steam engines it is unlikely that the electric operation of reversing mills would pay, however economically the engines in the power house might work. For ordinary three-high mills a transformer is generally unnecessary, variations in load as high as 25 per cent. being easily taken care of in the power house by an increase of speed at most of 2 to 3 per cent.

The question now arises whether there is any economy in driving rolling mills electrically. As stated, the necessary plant, including the power house, is very costly. It would probably be found that with a simple installation, without transformer or secondary battery, with a power house driven by gas engines, figuring a loss of energy due to the electric transmission of at least 20 per cent. and including interest and depreciation, the total operating cost will be somewhat less than that of the steam engine.

COMPARATIVE FIGURES OF STEAM AND ELECTRIC INSTALLATIONS.

To illustrate the costliness of installing a power station and transformer some figures are given which were obtained to ascertain the relative advantages of a steam hoisting engine as against an electric installation for the same purpose. The power was to be obtained from an existing power house, and boilers were available either for a steam engine or for electric generators. The cost of the steam engine, including foundations and buildings, was estimated at \$22,500, while for the electric hoist with direct current-alternating current transformer the average of various bids was \$40,000. If the cost of the power station, which may be set at \$25,000, is added to this it will be seen that the total is far more than double that of the steam installation. The figures show that the increased charges for interest and depreciation more than offset the saving in fuel and make the cost of operating much more expensive with electric than with steam power. It is probable that the same result would be obtained if similar estimates were made for a reversing mill and that, in spite of the use of gas engines in the power house, direct driving by a steam engine would prove the more economical.

ADVANTAGES OF USING ELECTRICITY.

The advantages of using electricity are the greater security of operation and the possibility of dividing the gas engine installation into smaller units in the power house than is possible for direct driving, in which case the gas engine must necessarily be of sufficient size to run the mill. It is no doubt advantageous to drive small mills, requiring 250 to 500 horse-power, electrically, if a suitable power house is available, but for larger trains the case is different.

Unfortunately the manufacture of gas engines is not so

far advanced that they can be built to work with the certainty of steam engines. Each engine will at first give a certain amount of trouble; its weak points, great or small, must be discovered, and not until they are remedied will there be any certainty of operation. In many cases where gas engines have been installed for driving mills trouble has been caused by the engine being too small for the work which it is to perform. The point has in many cases been overlooked that the gas engine's nominal power is its maximum, while with a steam engine its nominal power may be exceeded by 50 per cent. or even more. A mill gas engine should have a large reserve of power, so that it may cope with steel insufficiently heated, with a greater output of the mill, or with other factors causing an increase in the power required.

Another point which has often led to too small an engine being installed is that the quality of blast furnace gas is very variable. It is generally stated that such gas has a heating value of 900 or even 950 units.* It is true that such a gas is often made, and sometimes one that is richer, but it is equally true that the heating value may be only 800 and as low as 750 units. If an engine is working under its full load, which it is designed to carry with 900-unit gas, it is clear that it will not be able to do the work if the value of the gas falls as low as indicated above. Recent reports show that gas engines driving mills directly are giving better satisfaction than is often supposed, many of the troubles which were at first experienced having been overcome. Finally it may be stated that it is advisable to use duplex engines with a large excess of power for rolling mills. It is then possible, if one side of the engine needs repairs, to operate the mill at least partially with the other side. By this means a certain amount of reserve is acquired.

Confirmation by H. Wild.

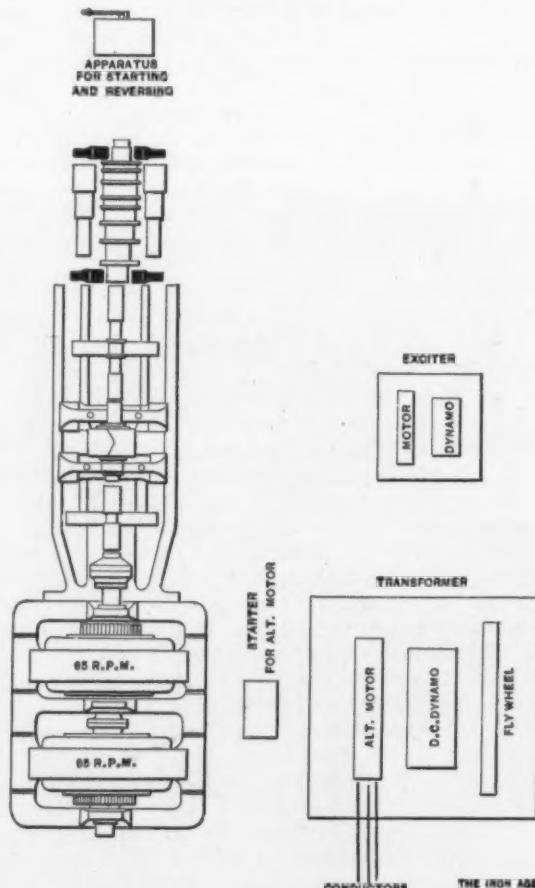
In a subsequent number of our contemporary H. Wild, a retired mill manager, confirms Mr. Ortmann's conclusions that only in the case of small mills is there any assurance of profit in electric driving, while for large units the charges for interest, &c., will eat up anything saved in other directions. He considers gas engines using blast furnace gas very suitable for rolling mills and has reached the conclusion that they should have 1.8 times the power of a steam engine for the same purpose. If the blast furnaces are situated any distance from the mill the gas might be compressed at its source, in order to reduce the size and cost of piping, and the installation of a gas holder is advisable in order that the mill may not too quickly be affected by trouble at the furnaces. A gas engine will not pay when the gas for it is produced specially and the installation replaces an existing steam engine, for it is not capable of saving in fuel the interest charges on the new plant and the old.

Comparison of Costs by F. Weideneder.

It is interesting to compare the views of these two practical mill men with an article published in the same paper by F. Weideneder, who compares the relative cost of driving reversing mills electrically and by means of steam engines, both with and without the use of exhaust turbines. He states that the General Electric Company of Berlin has an order for three installations for electrically driving reversing mills, each for a maximum load of 9,000 horse-power. They will be constructed on the same principle as electric mine hoists, the variations in load being balanced by a fly wheel. The arrangement is shown in the accompanying illustration.

The rolls are coupled either directly or by means of gearing to the direct current motor. For blooming mills with an average of 60 to 65 revolutions per minute the use of gearing will be avoided. An unfavorable position of cranks, as happens with a steam engine, does not have to be taken into account, and a motor of the power in question will not be particularly expensive even at this low speed. In order that the power station may not be affected by the sudden variations in load and to avoid the loss of energy in resistances, a transformer is installed near the mill. This consists of a direct current dynamo, which is coupled directly to an alternating cur-

rent motor on one side and a 50-ton fly wheel on the other. The motor is connected with the central station circuit. When running light the speed of this transformer is 365 revolutions per minute. In order to make use of the inertia of the fly wheel, however, the speed must decrease as the load increases and *vice versa*. This is effected automatically by increasing the resistance in the armature as the load increases; this causes but slight loss of power. A maximum decrease in speed of 20 per cent. is sufficient for large reversing mills.



A German Method of Driving Rolls Electrically.

As regards size, the dynamo should be designed for the maximum load of 9000 horse-power, the alternating current motor for the average load of 2000 horse-power. The field current for the dynamo and the mill motor is generated by a transformer, consisting of a 30-kw. direct current dynamo coupled directly to an alternating current motor of corresponding size.

Up to 65 revolutions per minute the speed is controlled by means of the current of the transformer dynamo on which it is dependent, so that it is easy to stop or brake the mill motor by reducing this current down to zero. During this braking period the inertia of the moving parts is converted into useful energy and stored up by increasing the speed of the fly wheel. In the final passes a higher speed is required and this, from 65 to 90 revolutions per minute, is attained by weakening the field of the driving motor. The fact that so doing decreases the turning moment is not disadvantageous, as less power is required than in the earlier passes.

Detailed figures are given to show the relative first cost and cost of operating of an electric installation and steam installation, both with and without exhaust turbines. Owing to the totally different conditions these figures are of little value in this country, however correct they may be in the land of their origin, but a statement of the final results arrived at may prove interesting, as follows:

Annual Interest, Depreciation and Operating Cost.

1. Steam engine with exhaust turbine.....\$104,500
2. Steam engine without exhaust turbine..... 121,100
3. Electric drive 63,800

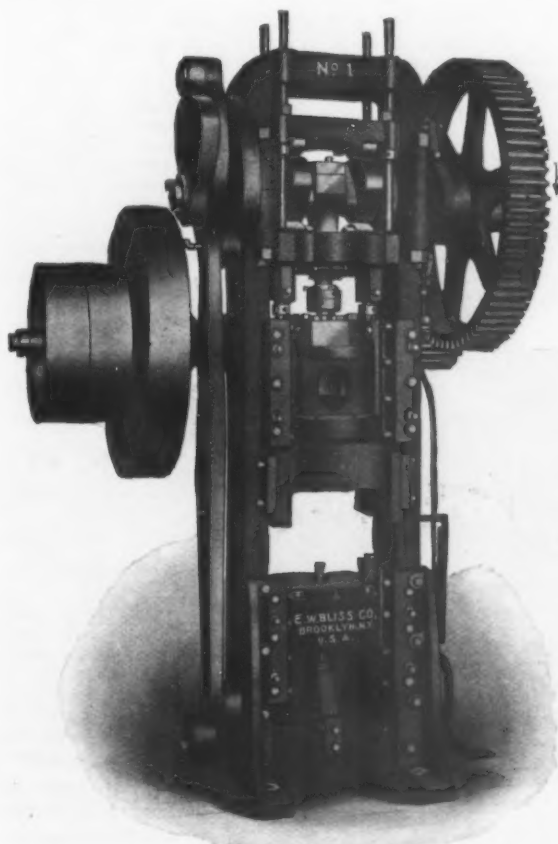
In all cases it is assumed that the steam is generated in coal-fired boilers and that the average load is 2000 horse-power.

* One unit = 1 calorie per cubic meter = 112.36 B. T. U. per 1000 cubic feet.

The New Bliss Triple Action Drawing Press.

An interesting development may be traced in the building of drawing presses. First there was the plain single action press. Later the E. W. Bliss Company, 11 Adams street, Brooklyn, N. Y., placed on the market a toggle drawing press which has come to be considered a standard tool for drawing all kinds of sheet metal goods. Now from this there has been evolved by the same company the triple action drawing press illustrated in the accompanying half-tone engraving. This type of press is offered as especially useful and economical for drawing deep seamless shells.

In addition to the plunger this press has two slides, one of which has an independent dwell, permitting the making in one operation of work that has hitherto required two operations. This method does away with annealing the shells after the first operation, inasmuch as the second operation follows the first immediately, the



A Triple Action Press, a New Type Built by the E. W. Bliss Company.

second draw being made while the metal is still hot from the first drawing.

This is an entirely new type of press, and in all probability has not yet reached its full attainments, but it has already been successfully used in making a tin shell 3 inches in diameter by 3 inches deep at one stroke of the press. The press shown will receive a blank 11 inches in diameter and a drawing punch up to 6 inches in diameter. It will draw in depth and lift out 3 inches. The total weight of the machine is 8000 pounds. It is of compact construction, and occupies no more room than a double action press of corresponding size for the second operation shell. The press may be set in an inclined position, allowing the finished shell to fall out by gravity.

Chilled Cast Iron for Permanent Magnets.—A paper on the use of chilled cast iron for permanent magnets was read by A. Campbell before a recent meeting of the Physical Society of London. Research on the subject conducted some years ago by J. R. Ashworth showed that rods of chilled cast iron could be made into very fair permanent magnets. B. O. Peirce of Harvard University

had made tests demonstrating the practical utility of chilled cast iron for magnets of moving coil galvanometers and other instruments. The investigation described by Mr. Campbell was made on rings in addition to rods of the standard dimensions used in testing magnet steels. All the specimens were heated to 1000 degrees C. and then chilled in cold water, care being taken to support them during this process, cast iron being very brittle at such a high temperature. The result showed that chilled cast iron is not much inferior to magnet steel. The speaker thought that the cheapness and ease of working cast iron should encourage instrument makers to test its capabilities in various instruments. The iron used was gray commercial cast iron, but several kinds have been tested in the experiments of J. R. Ashworth and little difference was found in their magnetic properties.

The Machinery Trade in Germany.

At the annual meeting of the Association of German Machinery Manufacturers, held in Berlin recently, Dr. C. Schrödter of Düsseldorf presented a report showing a membership of 185, an increase of 32 in the year. Machinery imports in 1905 were reported to be 78,298 tons, compared with 77,661 tons in 1904. Exports were 309,580 tons, compared with 273,670 tons in 1904.

The president, Dr. H. Lueg of Düsseldorf, referred in his address to the activity prevailing in machinery manufacture. In spite of the better employment of the works, however, prices have improved little and not in proportion to the increase in raw material. Bids on public contracts for machinery have shown great variation in prices, from which it is concluded that manufacturing costs are not calculated by any uniform system. A committee of the association has been appointed to formulate a definite system of estimates. Important changes in the methods of machinery manufacture have resulted from the extended use of electricity. The introduction of innovations on all hands is a chief reason for the full employment of German works. No less than 25 engineering works are engaged in manufacturing gas engines. A Swiss-German firm has already put out a total of over 500,000 horse-power in steam turbines, and the automobile business in France has become one of the most important lines of manufacture. The possibility of overproduction is a matter deserving consideration. The activity of machinery manufacturers has been due to some extent to the anticipation of wants by foreign buyers in view of the coming in of the new tariff. The new commercial treaties are considered unfavorable for the machinery trade, and if any falling off in employment should come the state of German works, the speaker said, would be as unfortunate as in the years of depression. Existing conditions suggested that machinery manufacturers should combine more closely. While the diversity in the machinery trade made a general combination impossible, groups might be formed in the beginning and later a central office might be established. It was decided by those present to form the steam engine manufacturers into a separate section.

Ex-President Joseph Ramsey of the Wabash Railroad announced last week that he had organized the Lorain Southern Railroad and had purchased the Industrial Road of Lorain, Ohio, from the Sheffield Land Company. He will build a line from Lorain to the Hocking Valley and other coal fields in Southern Ohio. Mr. Ramsey has made a contract with the Carnegie Steel Company for 4,000 tons of rails for delivery this spring. The new road is expected to be completed as far south as Wellington, Ohio, by July 1. It will connect with the east and west roads which cross Ohio, and when the extensions south are finished the southern Ohio coal fields will have a new outlet to Lake Erie.

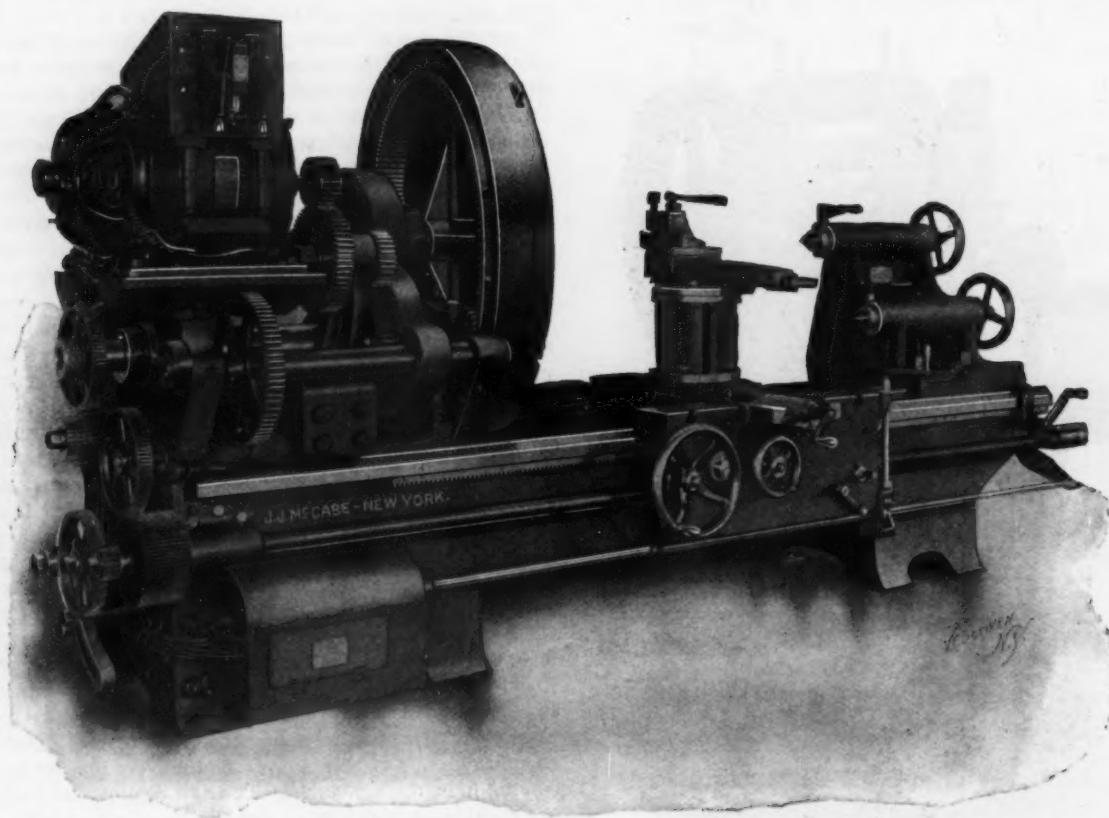
The American Pig Iron Storage Warrant Company had on hand at the end of February 35,300 tons, 2900 tons having been received in the month of February and 12,300 tons delivered. The stocks on January 31 were 44,700 tons.

The McCabe New Double Spindle Lathe.

A new style heavy pattern of the "2-in-1" double spindle lathe put on the market by J. J. McCabe, 14 Dey street, New York City, is illustrated herewith. Increased power, stiffer construction and better facilities for quick handling are the improvements. The engraving shows one of 26 to 48 inch size, with motor drive, recently completed for the Government Mint at Denver, Col. Some conception of the power of the lathe when used on the 48-inch swing may be had from the high ratio of back gearing—72 to 1—when the internally geared face plate is in use. While primarily intended for large work the lathe claims all the conveniences and advantages of a 26-inch lathe when the smaller spindle is employed.

The power for the lathe illustrated is supplied by a 7 horse-power variable speed direct current motor, which has a range of 20 speeds from 350 to 1750 per minute. It is mounted on a table supported by brackets secured to

in its bearings. The upper spindle is triple geared and has double the power of the lower spindle. The internally geared face plate is an extra furnished only for unusually heavy work. A special feature of the carriage is that it is very easily shifted in spite of its large size. The blocking piece put under the compound rest when the upper spindle is used is made so that it may be quickly inserted or removed. The carriage has longitudinal and cross feeds, reversed in the apron. The equipment of change gears for threading allows the cutting of one thread in 2 inches to 32 threads per inch on the lower spindle, and one thread in 4 inches to 16 threads per inch on the upper spindle. The feed shaft is a splined screw, the threads of which are used only for screw cutting, the ordinary feeds being friction driven. There are three changes of feed without changing gears. By using the regular change gears almost any feed may be obtained. If it should be desired the swings of the two spindles may be permanently increased to 32 and 54



The McCabe 26-48 Inch Double Spindle Lathe, with Motor Drive.

the head stock and is geared from the motor shaft to the lower spindle. The controller is of the drum type, placed horizontally near the floor on the pedestal at the head end of the lathe, and is manipulated through a splined shaft running along the bed, connected through bevel gears with a handle which travels with the carriage. A double pole circuit breaker, mounted on a slate slab over the motor, takes the place of fuses and knife switch. Two similar lathes, equipped with $7\frac{1}{2}$ horse-power alternating current motors, have been furnished to the Lackawanna Steel Company, Buffalo, N. Y.

The actual swing of the upper spindle over the bed is 49 inches, over the wings of the carriage 45 inches and over the carriage 40 inches. The lower spindle over the bed has a swing of 26 inches and over the carriage 16 inches. The bed illustrated is 10 feet long and the distance between centers is 4 feet. Longer beds up to 40 feet may be had. A lathe with a 10-foot bed weighs 10,500 pounds. On the belt driven form a five-step cone pulley is furnished. The head is fitted with four adjusting screws, so that it may be maintained in perfect alignment. The tail stock is fitted with a jib to take up wear and is arranged to set over for taper work.

The lower spindle has its back gears placed in front, where they do not have the tendency to lift the spindle

inches, respectively, by putting separate block: under the head stock, tail stock and compound rest.

In the United States Circuit Court at Indianapolis, Ind., in the suit of the Columbia Wire Company against the Kokomo Steel & Wire Company, a decree was entered confirming the plaintiff's sole and exclusive ownership of letters patent No. 365,723, covering improvements in machinery for the manufacture of barb wire, and it was directed that an accounting be made of the amount due the plaintiff for infringement. The decree states that because the life of the letters patent has expired no injunction is granted against the defendant.

Statistics of pig iron production in Russia for the first half of 1905 show a slight falling off from the corresponding period in 1904, the output being 1,404,036 metric tons in the first half of 1905, against 1,477,613 tons in the first half of 1904. Stocks of iron increased from 665,447 tons on July 1, 1904, to 753,450 on July 1, 1905. The output of semifinished products declined from 1,505,067 tons to 1,346,235 tons and the output of finished products from 1,250,898 tons to 1,168,195 tons.

Gas Producers for Power.*

BY JULIUS WILE.

It is well known that steam boilers and engines, even when used with condensers, superheaters and economizers, realize only a comparatively small part of the original heat of the fuel. The highest combined thermal efficiency yet obtained in steam practice is approximately 15 per cent. of the original value of the coal converted into work, while efficiencies of 3 to 6 per cent. are more common, especially in units of from 50 to 250 horse-power, where noncondensing engines are usually employed. With the gas producer and producer gas engine an efficiency of over 22 per cent. is now common and even in comparatively small units, while the tendency of this latest power is toward even higher efficiencies, as high as 24 per cent. having already been obtained. A comparison of efficiencies of steam engines and boilers with producer gas engines and gas producers using various fuels is of interest:

Efficiencies of Steam Engines and Boilers.

Type.	Coal taken at 13,000 B. T. U. per pound.	
	Pounds of coal per B. H. P.	Thermal efficiency. Per cent.
Simple noncondensing, throttling.....	6	3.26
Simple noncondensing, automatic.....	4½	4.35
Simple noncondensing, Corliss.....	3½	5.6
Compound noncondensing, Corliss.....	3	6.55
Compound condensing, Corliss.....	2½	8.75
Steam turbine condensing, Corliss.....	1¾	11.25
Triple condensing, Corliss.....	1½	14.75

Efficiencies of Gas Engines and Pressure Gas Plants.

Brake horse-power.	Type of producer.	Type of engine.	Fuel.	Fuel consumption.		Thermal efficiency. Total per cent.
				B. T. U. per pound.	In pounds per B. H. P. Producer. Boiler.	
250	Taylor.	{ Westinghouse } { 3-cylinder. }	{ Colorado } { bitum. }	9,767	1.66 0.29	1.95 13.40
250	Wilson.	{ Stockport } { single cyl. }	Bituminous.	*11,000	1.26 0.14	1.4 16.5
280	Dowson.	{ Campbell } { 4-cyl. vertical. }	Anthracite.	*13,600	0.99 0.13	1.12 15.50
3,000	Dowson.	{ Westinghouse } { 3-cylinder. }	Anthracite.	*13,600	1.07 0.13	1.20 15.60

* B. T. U. of the coal is assumed.

Efficiencies of Gas Engines and Suction Gas Plants.

Brake horse-power.	Type of engine.	Fuel.	Fuel in Th'mal pounds efficiency,	
			B. T. U. per pound.	B. H. P. per ct.
20	National, single cyl.	Anthracite.	15,138	0.797 21½
90	Crossley, single cyl.	Coke.	12,411	0.91 22½
250	Deutz, double acting.	Anthracite.	14,600	0.744 23¾
300	Crossley, 2-cylinder.	Anthracite.	11,370	0.975 24

The above results are from actual tests, and where the heat units in a pound have not been given in the reports they have been assumed. It will be noticed that suction gas producers are more efficient than the pressure types, while anthracite coal pressure producers are more efficient than bituminous pressure gas producers.

The Blast Furnace An Ideal Gas Producer.

Producer gas is the result of incomplete combustion of fuel due to the absence of sufficient oxygen to support combustion, and for its formation a deep fuel bed is essential. An ordinary blast furnace is an ideal gas producer, as the body of coal or coke is subject to a blast of air beneath the fuel bed, but there is no provision above for burning the carbon monoxide (CO) formed by partial combustion to carbonic acid gas (CO₂). The gas from a blast furnace has the lowest heat value per cubic foot of any producer gas, being only approximately 90 British thermal units per cubic foot. A notable plant where blast furnace gas is used is that of the Lackawanna Steel Company at Buffalo. In this plant there are 16 2000 horse-power gas driven blowing engines as well as eight 1000 horse-power gas engines driving alternating current and direct current generators, making a total of 40,000 horse-power. For every ton of pig iron produced after the waste gases have been used to heat the air blast there is still in them an amount of power equivalent to 600 horse-power hours. For doing the work of the blast furnace about 240 horse-power hours are necessary,

which leaves 360 horse-power hours available for other purposes. To make this gas suitable for use in a gas engine it is necessary that it be thoroughly cleaned of all impurities, and a cleaning apparatus is common to all forms of gas producers used for power purposes. It has been found that on account of the minute particles of dust and the different classes of iron as well as coke or coal which are used in the blast furnace a cleaning apparatus suitable for one class of gas is not always suitable for another.

The following table gives the heat value and chemical composition of various gases used in gas engines:

Heat Value and Chemical Composition of Various Gases.

	H	CH ₄	C ₂ H ₄	CO	CO ₂	N.B.T.U.
Blast furnace gas.....	1	..	..	25	12	62 90
Producer gas from anthracite.....	1.2	1.5	..	27	3.5	57 140
Producer gas from bitum.....	1.0	6.5	..	15	10	58.5 150
Blue water gas.....	44.5	..	..	42	3.5	10 295
Coke oven gas.....	39	40	..	5	5 3	8 660
Coal gas.....	45	38	..	6	6 1	4 720
Natural gas.....	2	95	..	..	..	3 1,020

Another form of gas producer is the by-product coke oven. In coking 1 long ton of coking coal in a retort 8000 to 10,000 cubic feet of gas is generated, carrying from 60 to 100 pounds of tar and 10 to 20 pounds of ammonia sulphate. The sale of these products usually covers the cost of their extraction. About one-half of the total value of the gas, which is approximately 600 British thermal units, is required for carrying on the coking process, so that from 1 ton of coal there is available about 200 effective horse-power hours.

Gas Producers.

Blast furnaces and coke oven furnaces are only local and natural gas is also confined to certain districts, so that there is a large field for gas production by gas producers. The gas made in gas producers has a higher value than blast furnace gas, due to the introduction of steam, which is decomposed into hydrogen and oxygen, with the twofold advantage of adding hydrogen to the gas and oxygen to support combustion, without introducing large quantities of inert nitrogen, as when air is admitted. Producer gas has a calorific value of approximately 140 British thermal units per cubic foot, depending upon the type of producer. With different types the proportions of CO₂, CO and H vary, but the general average is approximately as given in the table.

The two general types of gas producers, pressure and suction, make comparatively the same quality of gas. The characteristic of the pressure type is that the complete system is under pressure, supplied either by a steam jet blower or a power driven fan. A gas holder is necessary for storing the gas, and also an independent steam boiler. In the suction type the complete system is under suction from the engine, which causes the draft. Both the holder and independent steam boiler are done away with, and steam at atmospheric pressure is raised by the hot gases from the generator passing to the cleaning apparatus. The space occupied by the suction type is less than that of the pressure, and is less than the space taken by a return tubular boiler of the same power. The attention is also considerably less than that required by the pressure type. In the pressure type unless automatic feeders are installed it is necessary to feed once every half hour. Suction producers are fitted with large reservoirs, so that feeding is only necessary once in three hours at full load and once in five hours at half load. The total attention otherwise required is 15 minutes starting up in the morning and 20 minutes cleaning at night.

* From a paper read before the Technology Club, Syracuse, N. Y., February 13. Mr. Wile is president of the Wile Power Gas Company, Rochester, N. Y.

The first pressure gas producer was brought out by Dowson in England. The best known Dowson plant is that at Walthamstow, London, England, where there is a 3000 horse-power (2000 kw.) plant, comprising eight Dowson gas generators and 13 direct coupled vertical engines. The generating cost per kilowatt hour of this plant complete, including fuel, supplies, labor and repairs, will be of interest, especially when compared to the average of eleven steam plants in London, which have about three times the output.

B. H. P. hours.....	317	1,104	1,596	2,039
Pounds of coal per B. H. P. hour	1.9	1.6	1.6	1.4
Engine efficiency, per cent....	63	77	83	86
I. H. P. hours.....	503	1,433	1,922	2,370
Pounds coal per I. H. P. hour.	1.2	1.2	1.3	1.2

12½ per cent. of the weight of fuel charged into producer was withdrawn as ash during each test period.
Level of fuel in producer kept up to given point.
Fuel used, Nottingham fine bituminous slack, at \$1.40 per ton at pit mouth.
Cost of fuel per I. H. P. = 75 cents.

One and four-tenths pounds of coal per brake-horse-

Comparative Tests of Steam and Pressure Gas Power Plants, London District.

	Kilowatt capacity.	Output units.	Load factor. Per cent.	Cost of fuel per ton. \$	Cost per unit.				Total. C.
					Fuel. C.	Supplies. C.	Labor. C.	Repairs. C.	
Average 11 steam plants.....	2,799	2,997,500	17.25	5.00	1.194	0.118	0.418	0.436	2.176
Pressure producer gas.....	810	1,019,326	15.45	6.75	0.736	0.304	0.576	0.096	1.712
Difference.....	-1,989	-1,978,174	-1.80	+1.75	-0.458	+0.186	+0.158	-0.340	-0.464

The saving in cost per kilowatt is almost one-half cent. These costs are high, for both coal and water are high in the London district, as the cost of anthracite coal used was \$6.75, while the steam coal costs about \$5.00 per ton. Even under these disadvantages it is seen that the Walthamstow plant shows a saving of 38 per cent. in fuel and 21 per cent. in operating cost. If the cost of fuel were the same the saving in fuel would be 51 per cent. and in operating costs 29 per cent. The test of another gas producer pressure plant and steam plant at Guernsey, England, gives even better results:

power-hour is the result using bituminous slack coal with 12½ per cent. ash. It will be noticed that about 10 per cent. of the fuel is used to raise steam in the boiler. The above table will also give a very good idea of the consumption of fuel of a gas engine at variable loads.

The generator used is the ordinary water bottom generator, which is in general use in connection with steel and glass works for making producer gas for fuel purposes. These producers are designed so that they can be cleaned of ash while they are in operation and with ample facilities for poking.

Result at Plant at Guernsey, England.

	Kilowatt capacity.	Output units.	Load factor. Per cent.	Cost of fuel per ton. \$	Cost per unit.				Total. C.
					Fuel. C.	Supplies. C.	Labor. C.	Repairs. C.	
Steam plant.....	180	55,108	45.6	4.20	1.178	0.156	0.284	0.512	2.130
Gas plant.....	180	50,361	65.8	4.43	0.496	0.096	0.304	0.208	1.104
Difference.....		-4,847	+20.2	+0.23	-0.682	-0.060	+0.020	-0.304	-1.026

At above loads, coal per unit.... { Steam .6,131 pounds.
Gas .2.44 pounds.
Above test covers a period of one month.

It will be noted in this plant that the saving is 58 per cent. in fuel and 48 per cent. in operating cost.

The first pressure plants were originally designed to use anthracite coal, as bituminous coal involves considerable waste of water and power on account of the nuisance in getting rid of the volatile matter containing tar. Bituminous coal is not suitable for small gas producers, on account of the tendency of the fuel to clinker, thus preventing the air and steam passing through the fuel bed, and also due to the tendency for hollow spaces to be formed in the bed, so that air passes through and a poor and nonuniform quality of gas is made. A fairly good size bed of fuel is necessary, and for this reason bituminous coal producers are seldom used below units of 200 horse-power. Pressure producers with tar extracting devices are also used for burning wood and lignite.

In England the best known soft coal producer for power plants is the Wilson, which is a Dowson pressure type of plant with modifications adopted toward depositing a large amount of the tar in a dust catcher and cooling towers before going to the coke scrubber. The plant is also fitted with a hydraulic washer and sawdust purifier for taking out the remaining traces of tar. In this type of plant there is no attempt made to recover the tar and utilize it to enrich the gas, all efforts being toward washing it out. Still the results of this type of plant are good, as the following table of four independent tests of a 250 horse-power Wilson plant, conducted in Liverpool with variable loads, will show:

Tests of a Wilson Producer.

Date, 1904.....	Feb. 27.	Mar. 3.	Mar. 4.	Feb. 26.
Amount of load.....	¼ load.	½ load.	¾ load.	Full load.
Duration of tests.....	5 hours.	10 hours.	10 hours.	10 hours.
Fuel used in producer, pounds.	560	1,568	2,296	2,744
Fuel used in broiler, pounds...	56	224	280	306
Totals.....	616	1,792	2,576	3,050
Kilowatt hours per wattmeter.	187	717	1,060	1,369
Dynamo efficiency, per cent....	79	87	89	90

The nearest approach to this type of producer in this country is the Taylor producer, upon which tests were made at St. Louis within the past year by the United States Geological Survey. A test with this producer is given above. These tests were very valuable as far as showing the efficiencies of the different coals throughout the country for use in gas producers, but as to the best results to be obtained for production of power, due to the more recent types, this type of plant is open to the following criticisms: No attempt was made to utilize the value of the heat in the tar; the steam necessary for the plant was raised in an independent boiler, which requires excess fuel; further, extra power and consequently fuel and also large quantities of water were required to wash out the tar. The main reason why this plant is not as efficient as the Wilson is because the scrubbing device is of the rotary type and requires power, while the Wilson uses the static type of scrubber. The efficiency of these producers is from 60 to 65 per cent.

The present tendency of American practice is to depart from the former method of washing the volatile matter containing the tar out of the gas, and to build a gas producer plant which will get rid of the tar by decomposing it in the producer by passing it through an incandescent fuel bed and fixing its components, hydrogen and carbon, which give free hydrogen or marsh gas, thereby receiving the additional advantage of the heat of the tar and doing away with the excess power and water required to clean it. It is an open question which of the two types of producers is the better, the less efficient but more reliable continuous cleaning and less costly European producer or the more efficient but complicated and expensive American type.

• The Wile Gas Producer.

An interesting departure from the current practice in pressure plants where the generator is under suction is the automatic system, as manufactured by the Wile

Power Gas Company, Rochester, N. Y., which substitutes a small regulating receiver for a large gas holder. The use of the automatic regulating receiver does away with the attention of the man, as it automatically makes its gas as required. This is done by the introduction of a third return pipe from the gas receiver to a hydraulic seal box, so that when the receiver rises to its top position the third return pipe and valve are opened and put in communication with the seal box and the exhaustor instead of sucking from the generator sucks from the holder. When the holder tends to go down the valve closes and the exhaustor at once sucks from the generator. In actual practice the holder is always kept at the top.

From the data which have been given it will be seen that the suction gas producer is the type of gas producer which has shown the greatest development for producing power. It is now being used on both land and water. On land its greatest use is for electric lighting plants, pumping plants and for power purposes in factories where large quantities of heat are not required; on water, towing barges are now in daily use. On the River Elbe the cost of towing has been reduced from 0.4 cents per ton per mile by steamboat to 0.25 cent with gas power.

The suction gas producer to-day is limited to the use of anthracite pea coal, charcoal and coke, while in large sizes anthracite buckwheat coal can be used. Soft coal has not yet been successfully used in suction gas producers, but experiments are now being made which will probably lead to a successful bituminous coal suction gas producer. The success of the suction gas producer is not entirely due to the remarkable fuel economy over steam plants, but is also due to the small amount of attention required, from one to two hours a day, depending upon the size of the plant. There are suction producers in operation which run 144 hours a week without shut down.

The weakness of suction gas producers heretofore has been their inability to make a uniform quality of gas with variable load. This has now been overcome by introducing a secondary air supply, by which the ratio of air to steam, and consequently the temperature of the fire, can be controlled. The tendency in the ordinary suction producer is for all the steam which is made to be drawn into the fire and has resulted in trouble, due to the fact that in some cases at light loads too much steam has been taken into the fire, which is consequently in poor condition to respond to an increase of load. The addition of the secondary air supply enables an extra amount of air to be taken into the fire and at the same time offsets the tendency of excess steam, which escapes through the primary air cocks. Another great assistance in maintaining a fuel bed which will respond quickly to changes in load is the advantage of preheating all the air and steam which enter the fire.

When installing suction producers care should be taken that sufficient purifying plant is supplied, otherwise the pipes are in time liable to clog with the accumulated dirt.

The Shenango Iron & Steel Company.—It is officially stated that press reports are wholly untrue that this company, whose offices are in the Lewis Building, Pittsburgh, and works at Wheatland, Pa., would build a blast furnace and new puddling mills. While the company does not intend to build a blast furnace it is making some extensions and improvements to its plant at Wheatland. This plant is now in operation, the product being muck bar, refined iron bars and sheared iron skelp, the latter in sizes from $1\frac{1}{4}$ to 34 inches wide and from 3-16 inch to $1\frac{1}{4}$ inches thick.

The Barrientos Tunnel, located about 11 miles from the City of Mexico and owned and operated jointly by the Mexican National and Mexican Central railroads, it is said, is unique in four respects. It was driven at the fastest rate ever attained in railway tunnel work in Mexico; its cost per unit of excavation was lower than that of any other similar work in the Republic; it is the only double track tunnel in Mexico, and it was constructed without the loss of a single life. It is 735 feet long, 37 wide and 28 high, and is lined with concrete blocks.

Steel Merger Rumors.

The daily newspapers have discovered "another great steel merger," the United States Steel Corporation being reported to be about to absorb the Republic Iron & Steel Company, the Tennessee Coal, Iron & Railroad Company, the Colorado Fuel & Iron Company, the Sloss-Sheffield Steel & Iron Company, the La Belle Iron Works and the Shenango Furnace Company. This story has been authoritatively denied by enough of the parties named to stamp it as utterly untrue. A merger which may be brought about, however, affects a totally different set of steel plants. Negotiations are now proceeding which have for their purpose the consolidation of the interests of the Jones & Laughlin Steel Company, the Lackawanna Steel Company, the Bethlehem Steel Company and perhaps the La Belle Iron Works. The union of these properties under one management would indeed be a most important event in the steel trade.

Silicon-Manganese Pig Iron Determination.

Chambers B. Campbell, chemist of the Antrim Iron Company, Mancelona, Mich., has furnished us with his method of determining the contents of silicon and manganese in pig iron, which is a combination of Drown's silicon method with Deshay's and Marshal and Walters' manganese methods. He says that many chemists have had trouble in getting Walters' method to work with pig iron, while failures have come in trying to use Deshay's titration with Walters' method, but he has met with perfect success in using them, his adaptation being new and several features original. The method is as follows:

Place 0.47 gram sample in 100 c.cm. beaker. Add 10 c. cm. silicon mixture (1500 c. cm. water, 400 c. cm. sulphuric, 800 c. cm. nitric and 600 c. cm. hydrochloric). Evaporate on thin asbestos to ample fumes. Take up in 15 c. cm. water and boil until dark and clear. Filter into 150 c. cm. beaker, washing several times with hot water. Remove filtrate, add 10 c. cm. strong nitric and 30 c. cm. cold water; then 10 c. cm. silver nitrate solution (9 grams in 2000 c. cm. water) and 10 c. cm. ammonium persulphate solution (400 grams in 2000 c. cm. water). Stir, put on watch glass and set on steam plate, or equivalent mild heat. When the purple shines and the solution is clear and froths on stirring remove and allow to cool. Titrate with sodium arsenite standard to a clear green. Solution made by using 5 grams arsenious acid and 25 grams sodium carbonate in 1000 c. cm. water. Boil until clear. Filter and make up to 3715 c. cm.; 1 c. cm. equals 1-10 per cent. manganese. Treat the silica residue with one to one hydrochloric and hot water washings.

A call for a National Consular Reform Convention has been issued over the names of the New York Board of Trade and Transportation, Boston Chamber of Commerce, Boston Merchants' Association, Philadelphia Board of Trade, Trades League of Philadelphia, Chamber of Commerce of Buffalo, New York Produce Exchange, Chamber of Commerce of San Francisco, Baltimore Chamber of Commerce, Manufacturers' Association of New York, Board of Trade of Chicago and National Association of Manufacturers. The call is addressed to commercial, manufacturing and agricultural organizations, which are invited to send delegates on the basis of one delegate for each 50 members, those having over 100 members to send one delegate additional for each full 200 members in excess of 100. The convention will be held at the New Willard Hotel, Washington, D. C., March 13 and 14. The purpose of the movement is to secure legislation reforming the consular service by securing the appointment of men selected for their fitness and not subject to removal with changes in the national administration. Responses to the call are to be sent to Frank S. Gardner, secretary New York Board of Trade and Transportation, 203 Broadway, New York City.

The Gayley Dry Air Blast Process.*

BY C. A. MEISSNER, NEW YORK.

At the Washington meeting of the institute, May, 1905, a very instructive and interesting paper was presented by J. E. Johnson, Jr., entitled "Notes on the Physical Action of the Blast Furnace," in which reference is made to Mr. Gayley's dry blast process. A few of Mr. Johnson's conclusions, as summarized in the last pages of his paper, do not appear to me to be in complete accordance with the results obtained at the Isabelle furnaces, and I therefore present the following notes, which may throw further light on this subject.

Mr. Gayley has called attention to the fact that the moisture in the air is an extremely variable and uncertain factor and that, while every possible effort has been made to control the composition of the burden of raw materials within 10 per cent. of variation, yet there has been no such control of the composition of the blast, the actual weight of which is 1.43 to 1 of the weight of the solid charge and which may vary daily from 20 to 100 per cent. of its content of moisture and in its temperature. Those who have studied the subject know that these conditions exist wherever iron is made. The gist of Mr. Gayley's labors in this direction is the endeavor to secure a uniform composition of the air supply (which after all is the largest and most important factor in the manufacture of iron), as the furnaceman does for the mixture of fuel, ore and flux constituting the solid charge.

Various suggestions to bring about this result have been made by many writers, and in some cases it has been argued that the reported results of Mr. Gayley's dry air blast, showing a gain of from 16 to 20 per cent. in the output of pig iron and a saving of from 16 to 20 per cent. in coke consumption, were due to natural air conditions existing at the time of his experiments. It has also been pointed out that these reported economies were obtained in the winter months and that the results would have been quite different in the summer months. This criticism, however plausible, was based on insufficient data, Mr. Gayley's first figures having covered, in fact, but a comparatively short period and that largely in the winter months. But according to later experience covering summer months as well, all the dry air blast periods indicate a similar tendency to continuous higher pig production and lower coke consumption. This is shown by additional data given below.

Gain from Dry Blast Not Restricted to Summer Months.

A comparison of the natural blast records of Furnace No. 3 for the winter months, February and March, 1903, with similar previous records, showed that the coke consumption in these winter months (2225 pounds per ton of pig iron produced) did not differ materially from that of the summer months. In 1904 like results were obtained, the fuel consumption (2297 pounds per ton of pig iron produced) being practically constant throughout the year. In 1905, however, the records show that the lowest coke consumption, averaging about 1800 pounds per ton of pig iron produced, was obtained during the three winter months of the dry air period of Furnace No. 3, showing that the gain from the use of dry blast is by no means restricted to the summer months. In the winter months given above Furnace No. 3, running on mill iron, saved at least 20 per cent. in coke consumption as compared with that required by natural air, under otherwise similar conditions in the winter months of the two preceding years. It has also been said that in very cold, dry periods an increase in pig iron production and a decrease in coke consumption equal to those reported by Mr. Gayley have been obtained. It is to be regretted that these statements were not accompanied with tabulated data, permitting critical comparisons. Such data should show the length of time covered and especially whether the 20 per cent. increase

of pig iron production and the 20 per cent. decrease in coke consumption were obtained simultaneously.

I have in mind here Walter Crooks' graphic statement* showing a gain in production and decrease in coke consumption during winter months over summer months for two years, yet even these figures show but 6 per cent pig iron increase and 9 per cent. coke decrease. No data are given showing what the actual production or coke consumption was nor what the temperature of blast was.

Natural Dry Atmospheric Conditions May Show Increased Production But Do Not Show Decreased Coke Consumption.

Among the records which I have been able to study (those of about 90 furnaces for from four to six years back) there are none which show that any such percentage of iron increase and coke decrease either took place simultaneously under natural dry atmospheric conditions or even covered separately any long period. They often show a distinct tendency to an increase in the iron production during such natural dry blast conditions, but, with few exceptions, practically stationary or but slightly varying coke consumption. In the early part of November, 1905, when the atmospheric conditions gave an almost dry air, one of the Isabella furnaces, running with natural blast, increased its production from 375 to 430 tons per day, yet during all this time the coke consumption remained practically stationary, the increased iron production being due to the temporary ability to blow harder, which meant an increase in the number of revolutions. Moreover, this lasted only eight or ten days, so that it presented no parallel to Mr. Gayley's results, which were obtained with a decreased number of revolutions and an immediate and simultaneous increase in the production of iron and a decrease in the coke consumption.

In short, the economies effected by the use of the dry air blast are now shown to be uniform and continuous for periods of months together; to have been practically unaffected by stoppages, repairs or other disturbances, and to have been achieved with furnaces which had been running more than two and three years, producing, respectively, more than 300,000 and nearly 400,000 tons of pig iron upon their existing linings and had been repeatedly banked and were more or less damaged. I think this record cannot be matched from experience with natural air blast and is therefore conclusive as to the value of Mr. Gayley's invention.

Temperature of the Blast.

Another point brought out by some of the arguments on the subject, and one which is apparently carrying great weight in many minds, is the one of the temperature of the blast. It has been stated a number of times that an increase in blast temperature alone would accomplish the same results as those obtained by Mr. Gayley. The necessary increase to do this has been variously estimated at from 150 degrees to 400 degrees F., and the estimates of the amount of coke saved by every 100 degrees of increased blast temperature vary considerably.

Table 1, giving the average blast temperature during the natural blast and dry blast periods of the two furnaces named, shows a different of average of temperature between the first natural air period and the dry blast period of Furnace No. 1 of about 50 degrees F. only, while in the second natural air period, following that of dry blast, the average blast temperature was actually about 10 degrees F. higher. For Furnace No. 3 the natural air temperature was only 45 degrees below that of the dry blast.

According to Fig. 2 of Mr. Johnson's paper, air at 800 degrees F., containing 5 grains of moisture per cubic foot, would yield about 1200 British thermal units, and air at 850 degrees F., with 2 grains of moisture per cubic foot, would yield about 1450 British thermal units of "available heat" per pound of fuel consumed. The latter figure fairly represents dry blast conditions and (assuming the average coke consumption with natural blast as 2275 pounds per ton of pig) indicates a coke consumption for dry blast of 1875 pounds, which closely accords with practice.

* From a paper read at the Bethlehem meeting of the American Institute of Mining Engineers, February, 1906.

* Discussion Journal Iron and Steel Institute, Vol. LXVII, pp. 267, 268.

Table I.—Comparison of the Normal and Dry Blast Periods of No. 1 and No. 3 Isabella Furnaces.

No. 1 FURNACE.	No of days in period.	Kind of iron.	Average consump-		Engine revolu-	Grains of moisture.		Temperature.		Ratio.	Tons Pounds of ore lime per stone	Ch'ges pres- per day.	Flue dust per day.
			tion per pig	tion per day		In atmosphere.	In dry blast.	Day.	Night.				
First natural air period.	314	Bessemer	357	2,275	807	516	113	3.93	3.92	1 to 1.96	1,077	72.3	14.9
From July to October 15, 1903, banked three months.		and basic.											
Dry blast period.	164	Basic and Bessemer.	436	1,821	854	397	96	3.56	1.33	1 to 2.30	1,052	78.0	18.9
From January to August, 1904.													
Second natural air period.	205	Basic and Bessemer.	383	2,256	863	501	108	3.44	3.60	1 to 1.89	985	83.0	21.0
From August, 1904, to January, 1905, and including August, 1905.													
Dry blast period.	478	Basic and Bessemer.	370	2,258	775	...	108	3.22	3.35	1 to 1.90	1,232	82.0	28.2
From January to August, 1905.													
First natural air period.	21	Basic.	390	2,307	...	...	104	1.41	1.47	...	...	...	...
From January to September, 1903, banked four months.													
Dry blast period.	10	Basic.	453	2,204	785	...	...	...	...	...	...	...	...
From February to May, 1904, banked three months.													
Partial dry blast period.	4	...	425	1,930	680	...	111	1.46	1.46	...	...	...	...
From September to November, 1904.													
From December, 1904, to January 15, 1905.	17	...	432	1,824	...	...	...	...	...	...	...	...	...
Natural air, December.	203	Basic and Bessemer.	400	1,961	820	448	93	3.44	3.60	1 to 2.11	1,030	75.0	11.9
1 engine on dry blast, December.													
1 engine on dry blast, January.													
2 engines on dry blast, January.													
3 engines on dry blast, January.													
Dry blast period—From January to August, 1905.													

* Three engines used on each furnace.

We may proceed to inquire what would be the effect of dry blast combined with higher temperature, say, 1200 degrees F., which is 350 degrees F. more than that of the blast at the Isabella furnaces during the dry blast period in which their coke consumption was reduced to 1850 pounds. According to Mr. Johnson's diagram this increase from 850 degrees F. to 1200 degrees F. on a blast containing 2 grains of moisture per cubic foot should increase the "available heat" from 1450 to about 1850 British thermal units. Theoretically this would reduce the coke consumption of 1875 pounds for the former temperature to about 1270 pounds for the latter. But if we apply the practical factor of 50 pounds less coke per ton of pig for every additional 100 degrees F. of blast temperature we shall have, in the case stated, a saving of 175 pounds of coke per 350 degrees F. of additional temperature and consequently, for blast at 1200 degrees F., containing 2 grains of moisture per cubic foot, a coke consumption of 1700 pounds per ton of pig. This appears to be a reasonable expectation, according to our present knowledge of the effects of the dry blast.

Atmospheric Irregularities Counteract Blast Temperature.

Further study of the monthly blast temperatures showed that in many cases the monthly averages for natural air were higher than for dry blast, and yet that neither coke consumption nor product of iron differed materially in those particular months from the corresponding figures for other months of natural air blast, characterized by 100 degrees F. or 150 degrees F. lower blast temperature. In other words, the effects of the blast temperature, within these limits, were counteracted by other causes, such as the varying atmospheric temperature and moisture. Furnacemen are obliged to carry a surplus of coke above the theoretical requirement, as a reserve source of heat to meet these frequently great and sudden changes in the atmosphere, and the existence of this reserve (which would not be required with dry blast) prevents not only the close regulation of temperature, engine revolutions, &c., but also the clear interpretation of their effects. It has been suggested, indeed, that a continuous automatic record of these factors would permit a better control of them, but such frequent changes (sometimes from hour to hour) as this suggestion would require in the engine revolutions, blast temperature, charge, &c., would be not only well nigh impracticable, but might also cause other evils incident to irregular running and greater than those which they were intended to remedy.

The natural atmospheric irregularities referred to unquestionably affect the zone of fusion in the furnace, and such changes in the position and condition of this zone, which are the chief causes of difficulty in furnace management, are at times, by reason of atmospheric changes outside, much greater than has been generally assumed. Obviously the wisest course, if practicable, is not passively to suffer these effects to begin and then try to remedy them, but to prevent them altogether by securing uniform blast conditions, so that the zone of fusion may be held steadily in its position, thereby preventing scaffolding and irregular running, increasing the life of the lining and, above all, permitting a reduction of the amount of coke otherwise required as a margin of safety. It is not necessary to amplify this argument. The conditions involved are familiar to all furnacemen.

The temperature of the atmosphere, as supplied to the engine cylinders, is a very important factor in the use of dry air blast. The difference in weight of saturated and dry air per cubic foot at different temperatures is shown in Table II.

Table II.—Difference in Saturated and Dry Air Per Cubic Foot at Different Temperatures.

Grains of moisture at 100 per ct. saturation.	At.	Saturated.	Dry.
0.55	0° F.	= 0.0863 pounds per cubic foot of air, or 0.0864	
0.91	12° F.	= 0.0841 pounds per cubic foot of air, or 0.0842	
2.12	32° F.	= 0.0805 pounds per cubic foot of air, or 0.0807	
4.38	52° F.	= 0.0772 pounds per cubic foot of air, or 0.0776	
8.54	72° F.	= 0.0739 pounds per cubic foot of air, or 0.0747	
15.75	92° F.	= 0.0707 pounds per cubic foot of air, or 0.0720	

This table shows that a change of every 20 degrees F.

is equivalent to a change of 4 per cent. of the actual weight of air pumped into the furnace per revolution, or every 5° degrees F. is equivalent to 1 per cent. of air by weight. Taking this on approximately 40,000 cubic feet per minute blown at the Isabella works for one furnace, this 1 per cent. difference in weight of air for every 5 degrees would be equivalent to about 400 cubic feet per minute, or a little more than the air blown in by one revolution. The effect of this can be shown in several ways. For instance, comparing Furnaces Nos. 1 and 3. No. 1 running on dry blast and No. 3 on natural air, both with the same air cylinder capacity per minute (377 cubic feet per revolution), we find that No. 1 ran 96 revolutions, or 36,192 cubic feet, per minute, or 51,840,000 cubic feet per 24 hours, dry air blast entering at 28 degrees (the weight of the air saturated at 2 grains of moisture, being 0.081 pound per cubic foot), and gave 4,199,040 pounds of air in 24 hours, while No. 3 ran 113 revolutions, or 42,600 cubic feet per minute, or 61,344,000 cubic feet per 24 hours, normal air entering at 90 degrees (the weight of the air with 5 grains of moisture being 0.0711 pound per cubic foot), and gave 4,361,660 pounds of air in 24 hours.

In other words, about 3.75 per cent. less air goes in on 15 per cent. less blowing requirement. As the temperature of the dry air blast varies somewhat and is usually lower, it can be accepted that practically the same amount of air enters by weight in the above stated conditions, thus materially reducing the power required.

To show more clearly the effect of uniformity of temperature the data have been arranged in Tables III and IV.

Table III.—Some Results of the Dry Blast Period of Furnace No. 1.

	Daily pig iron make.	Coke consumption.	Moisture in dry blast.	Moisture in air.	Temperature of dry blast.	Temperature of atmosphere.
	Tons.	Pounds.	Grains.	Grains.	Deg. F.	Deg. F.
1904.						
August	448	1,753	1.80	5.62	27.1	71.0
September	442	1,754	1.56	5.15	22.0	71.5
October	416	1,862	1.18	3.11	18.0	55.5
November	442	1,816	1.02	1.99	19.0	44.0
December	455	1,823	1.03	1.43	17.5	33.5
1905.						
January	428	1,822	1.76	1.46	13.5	30.5
August	411	1,829	1.70	5.94	23.0	75.0

This indicated that, *per se*, the moisture content is not so controlling a factor as the temperature, or rather the uniformity of temperature. The differences in temperature in dry air, though comparatively much less violent than those of moisture, are, of course, almost stationary, compared to the differences in temperature of normal atmosphere, as shown in the normal blast period. As this matter appears of prime importance I have arranged a similar statement of the dry blast period of Furnace No. 3 in Table IV.

Table IV.—Some Results of the Dry Blast Period of Furnace No. 3.

	Daily pig iron make.	Coke consumption.	Moisture in dry blast.	Moisture in air.	Temperature of dry blast.	Temperature of atmosphere.
	Tons.	Pounds.	Grains.	Grains.	Deg. F.	Deg. F.
1905.						
February	418	1,850	0.60	1.18	15.0	23.8
March	407	1,837	0.95	2.26	14.0	43.8
April	398	2,095	1.04	2.57	16.0	49.2
May	436	2,024	1.50	4.08	23.0	62.2
June	415	1,965	1.70	5.76	24.0	71.1

The results appear of importance in showing that iron production and coke consumption are not entirely dependent on actual moisture—variations from month to month, in the dry blast, or on even wider variation in the natural atmospheric air. They indicate also that the benefits secured are derived largely from the general uniformity as well as low degree obtained through the use of dry blast, in the moisture content, and temperature of the air supplied to the blowing engines.

The actual lowering of both moisture and temperature is, of course, a very influential factor; but the variation of moisture within certain limits seems to be less important than the approximate uniformity in the weight of air going into the furnace, the low temperature increasing the actual weight of air per revolution, or permitting the

same amount of colder air by weight to be blown in by fewer revolutions.

R. A. Hadfield, in his recent presidential address to the Iron and Steel Institute, quoting an opinion that the economies ascribed to dry blast "were conclusively shown to be due to increasing the burden of ore and the quantity of lime in the clinder, rather than to the use of dry air," says:

It is well known that by increasing the burden of ore on a furnace the temperature of the escaping gases is lowered, the quantity of fuel required to smelt a ton of ore is reduced, and the yield of the furnace is increased.

Since all well-managed furnaces using natural air carry as much burden as they can, a further economy by means of a simple increase of burden is out of the question, unless it be made practicable by the use of the dry blast. Whether the direct cause of such further economy is the increased burden, or any one of the other conditions discussed above, it is only through the dry blast that the result is made possible. Unless it can be shown that the Isabella furnaces, when operated with natural blast, did not carry as heavy a burden or as much lime as they ought to have carried under the circumstances this criticism falls to the ground.

If any one effect of the dry blast is to be emphasized as the chief cause of the resultant economy it is, as already remarked, the uniformity of the conditions secured, combined with as low degree as possible, however they may be characterized. To secure this all-important uniformity it is evident that care must be taken to preserve unchanged the temperature of the air between the cold air chamber and the engine cylinder. This should be secured by properly covering the pipes.

The following comparative statements and tables are offered in additional support and explanation of the views above set forth:

Coke Consumption on Furnace No. 3.

To emphasize further the effect of uniform and steady dry blast, both as to moisture and temperature, reference should be made to the record of Furnace No. 3 for January, February and March, 1905. During these months dry blast was held very steady:

In moisture..... { Between 0.5 grain and 1 grain.
Extreme variation, 0.5 grain.
In temperature..... { Between 5° F. and 15° F., 10° F. average.
Extreme variation, 10°.

The coke consumption of Furnace No. 3 for these three months on basic low silicon iron, 50 per cent. Mesaba ore, was:

	Pounds.
January, 1905.....	1,824
February, 1905.....	1,815
March, 1905.....	1,787

After this period the dry air plant was not able to hold its moisture as low or its temperature as steady for the balance of dry blast run on Furnace No. 3. This is shown by Tables V and VI:

Table V.—Moisture Variation of Dry Blast, Furnace No. 3.

	Grains.
April, 1905....	0.5 grain to 1.75 grains—Extreme variation, 1.25
May, 1905....	0.75 grain to 2.25 grains—Extreme variation, 1.5
June, 1905....	1.25 grains to 2.50 grains—Extreme variation, 1.25
July, 1905....	1.00 grain to 2.25 grains—Extreme variation, 1.25

Table VI.—Temperature Variation of Dry Blast, Furnace No. 3.

April, 1905*, 10° to 25°—Actual aver., 17°, extreme variation, 15°	
May, 1905, 15° to 30°—Actual aver., 25°, extreme variation, 15°	
June, 1905, 20° to 30°—Actual aver., 30°, extreme variation, 10°	
July, 1905 15° to 30°—Actual aver., 23°, extreme variation, 15°	

* Dry blast conditions were better in April on account of the lower moisture of the outside atmosphere than in the following months.

The coke consumption of Furnace No. 3 during these months on Bessemer high silicon iron, 50 per cent. Mesaba ore, was:

	Pounds.
April, 1905.....	2,083
May, 1905.....	2,032
June, 1905.....	1,973
July, 1905.....	2,081

It will be noted that June, having the lowest coke consumption, has the least variation in temperature of dry blast.

The difference in fuel for these months between natural and dry air blast was less than the average practice, for the reasons that are given below.

The disturbing factors during these four months of 1905 were troubles at the furnace due to accidents and repairs and to leaking of bosh plates. Moreover, the furnace used during that time a large proportion of very fine ore and made a higher silicon iron. During this period the refrigerating apparatus was less effective, owing to the leaking of ammonia through the stuffing glands. This was unsuspected for a long time, as the apparatus had worked perfectly for the seven preceding months, and many other supposed causes were first investigated. When the true cause was finally discovered it was quickly remedied, as is shown by the results in the succeeding months of Furnace No. 1 (the dry blast being changed from Furnace No. 3 to No. 1 in August).

In practice it has been found that a variation of 0.12 per cent. in silicon has been found to be brought about by a change of 1 per cent. of the burden. Running basic iron on 1 per cent. and Bessemer iron on 1.5 per cent. of silicon gives $0.50 \div 0.12 = 4.17$ per cent. decrease in the burden, or 2.08 per cent. increase in coke, since ore burden to coke is approximately as 2 to 1. The average coke consumption during the first three months of 1905 for Furnace No. 3 was about 1800 pounds per ton of pig; 2.08 per cent. of this is an increase of 37 pounds. In Furnace No. 3 the coke consumption on Bessemer iron during April to June, 1905, was 2080 pounds, or 280 pounds higher than in the first three months. Deducting from this 37 pounds due to higher silicon leaves 243 pounds higher coke, due to furnace irregularities and poor dry blast conditions. As neither of the two factors of fine ore and high silicon changed the results materially when they occurred during natural air periods, I do not consider them as very serious factors in raising the coke consumption in this case, but as the furnace conditions would affect the results seriously, so would also the poorer dry blast conditions.

Comparing the foregoing with Furnace No. 1 while on dry blast, we find the following:

Table VII.—Moisture Variation of Dry Blast, Furnace No. 1.

	Grains.
August, 1904....	1.50 grains to 2.00 grains—Extreme variation, 0.5
Sept., 1904....	1.00 grain to 2.00 grains—Extreme variation, 1.5
Oct., 1904....	1.00 grain to 1.5 grains—Extreme variation, 0.5
Nov., 1904....	0.75 grain to 1.25 grains—Extreme variation, 0.5
Dec., 1904....	0.75 grain to 1.00 grain—Extreme variation, 0.25

Very few variations above or below these figures.

Table VIII.—Temperature Variation of Dry Blast, Furnace No. 1.

Aug., 1904 (20 days), 15° to 30°, act. aver., 22°, ex. variation, 15°	
September, 1904.... 5° to 25°, act. aver., 16°, ex. variation, 20°	
October, 1904.... 10° to 20°, act. aver., 18°, ex. variation, 10°	
November, 1904.... 15° to 20°, act. aver., 18°, ex. variation, 5°	
December, 1904.... 10° to 20°, act. aver., 18°, ex. variation, 10°	

Very few variations above or below these figures. In September temperature and moisture variations were greatest, but temperature was very low and coke consumption was 1754 pounds for that month.

The coke consumption on Furnace No. 1 with dry blast on basic low silicon iron, 50 per cent. Mesaba ore, during these months was:

	Pounds.
August, 1904 (20 days).....	1,753
September, 1904.....	1,754
October, 1904.....	1,862
November, 1904.....	1,816
December, 1904.....	1,823

Comparing this with the higher coke consumption on Furnace No. 3 from April to July, 1905, and the dry air conditions prevailing during those periods, it would indicate that more uniformity and steadiness of dry blast conditions existed during periods of lower coke consumption, and that low temperature, low moisture dry blast, combined with the least possible variation, appear to give the best results as to low coke consumption.

The difference due to temperature variations under dry blast conditions, as shown above, can be also shown as follows:

At 18° F., 40,000 cubic feet is 3,320 pounds of air per minute. At 24° F., 40,000 cubic feet is 3,276 pounds of air per minute.

That is to say, 44 pounds less air per minute (equivalent to 63,360 pounds per 24 hours) is blown into the furnace by the same number of revolutions, under an increase of 6° F. in temperature. This represents about the difference between furnaces No. 1 and No. 3 during their dry blast periods.

This difference in the amount of air blown in would affect the running of the furnace as follows: Under given pressure and temperature of blast the more air

blown in per minute the more rapid the combustion and consequently the greater the heat of combustion per unit of time. This rapidly increases the heat available for melting the material and consequently diminishes the amount of actual fuel required to melt the same amount of material, through greater intensity of heat for more rapid and complete combustion and through a greater concentration of heat in the fusion zone, bringing the latter closer to the tuyeres, where its best effect can be obtained. This is true, of course, always within certain limits, dependent upon the capacity and condition of each separate furnace.

[The general conclusions reached by Mr. Meissner were given in *The Iron Age* for March 1, page 771.]

Revised Price Schedule for Manganese Ores.

The Carnegie Steel Company's latest schedule of prices paid for domestic manganese ores shows, in addition to an advance in price, a noteworthy change in the phosphorus penalty clause. In the last preceding circular, that of November 21, 1905, the limit for phosphorus, as had long been the case, was 1-10 of 1 per cent. Under the new schedule deductions in price on account of phosphorus excess are not made unless that element exceeds 0.25 per cent., an increase of 0.15 per cent. in the limit. In the price per unit of manganese the latest circular makes an advance of 3 cents from the basis of the November 21 circular. The prices named are for deliveries at Lucy Furnaces, Pittsburgh, Pa.; Edgar Thomson Furnaces, Bessemer, Pa., or South Works, Illinois Steel Company, South Chicago, Ill. We quote from the circular as follows:

"Prices are based on ores containing not more than 8 per cent. silica and not more than 0.25 per cent. phosphorus and are subject to deductions as follows: For each 1 per cent. in excess of 8 per cent. silica there shall be a deduction of 15 cents per ton, fractions in proportion.

"For each 0.02 per cent. or fraction thereof in excess of 0.25 per cent. phosphorus there shall be a deduction of 2 cents per unit of manganese per ton:

	Metallic manganese. Per cent.	Prices per unit, cts. Iron.	Manganese.
Ore containing above.....	49	6	30
Ore containing above.....	46 to 49	6	29
Ore containing above.....	43 to 46	6	28
Ore containing above.....	40 to 43	6	27

"NOTE.—Ore containing less than 40 per cent. manganese, or more than 12 per cent. silica, or 0.27 per cent. phosphorus, subject to acceptance or refusal at buyer's option. Settlements are based on analysis of sample dried at 212 degrees F., the percentage of moisture in the sample as taken being deducted from the weight. Prices subject to change without notice, unless otherwise specially agreed upon."

Witherbee, Sherman & Co., Incorporated.—At the recent annual meeting of Witherbee, Sherman & Co., Incorporated, 71 Broadway, New York, the old officers and directors were re-elected for the ensuing year as follows: President, F. S. Witherbee; vice-president, E. A. S. Clarke; treasurer, W. C. Witherbee; secretary, L. W. Francis, who, together with W. T. Foote and Moses Taylor, constitute the Board of Directors. The shipments of ore from Port Henry by Witherbee, Sherman & Co. and the Port Henry Iron Ore Company during the year 1905 amounted to 622,227 tons, of which 289,763 tons were concentrates and 83,827 Old Bed 21 lump ore for puddling and basic open hearth use, the balance, or crude ore, being shipped for blast furnace purposes. This tonnage was the largest produced in any single year since the opening of the Port Henry mines, which have been continuously worked for over 60 years, in which time about 15,000,000 tons of ore have been mined. Plans are now under way for increasing the output still further, and within a few weeks it is expected that the average output will be on the basis of about 900,000 tons per year. These developments are being made as the ore companies are pressed to their utmost capacity to secure sufficient ore to fill orders now in hand.

The Pitman Pelton Wheel With Adjustable Nozzle.

A rectangular nozzle of adjustable cross section for varying the discharge is the new feature of the tangential water wheel illustrated. The wheel shown is 5 feet in diameter and was built by Percy Pitman, Bosbury, England.

Some of the conditions obtaining in this installation were a little unusual for Pelton wheel applications. Generally the heads are considerable, but in this case the fall was relatively low and variable, sometimes not exceeding 50 feet. It was important that high efficiency and close speed regulation should be secured under all working conditions, and the equipment has met the requirements

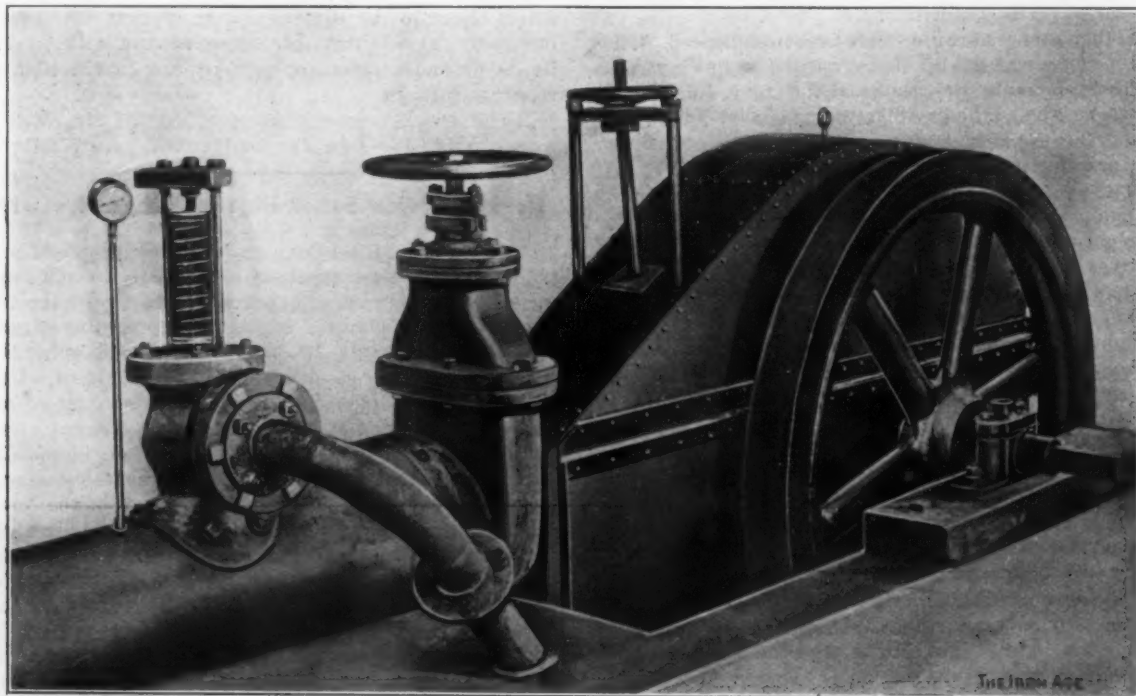


Fig. 1.—Exterior View of the Tangential Water Wheel, with Adjustable Nozzle, Built by Percy Pitman, Bosbury, Ledbury, England.

Ledbury, England, for the Glyn Slate Company, Limited, Glyn, North Wales. A triple nozzle wheel of the same builders' make was described in *The Iron Age*, September 21, 1905, but in this machine the discharge of the

so successfully that under sudden changes of load the speed variation has not exceeded 2 per cent. when the regulating screw was connected with the governor and the nozzle efficiency was excellent, as already mentioned. The governor becomes active when the speed varies from normal by one-third of 1 per cent. A heavy flywheel 5 feet in diameter mounted on the main shaft, as shown in Fig. 1, helps to make this close speed regulation possible. With a 50-foot effective head the wheel develops 25 brake horse-power at full load, but similar wheels with a higher head are now developing as high as 500 brake horse-power.

A section through the nozzle and part of the wheel is shown in Fig. 2, from which the nozzle will be seen to consist of two parts, a stationary casting N, with its end machined on a radius with the point P and a moving lip F supported by a quadrant pivoted at P. By means of a hand wheel and screw the lip F may be moved from or toward the fixed tongue E to increase or decrease the thickness of the stream of water which impinges on the buckets. The lip is accurately fitted to the fixed snout to avoid leakage at partial openings. The tongue E is of phosphor bronze and fits closely between the arms which carry the moving lip F. To reduce the jet gradually and avoid eddying the inner edge of F is rounded, as may be seen in Fig. 2.

The efficiency of the buckets is claimed to be 90 per cent. and the total efficiency of the wheel by Prony brake test was found to be 84 per cent. With a 50-foot head the brake horse-power per square inch of jet was 1.39 and with a 70-foot head 2.31. The normal speed is 108 revolutions per minute and the diameter of the supply pipe is 12 inches.

The wheel center is a pressed steel plate machined and balanced, to which buckets are secured by two body-bound, turned steel bolts fitted into reamed holes. The buckets are carefully equalized in weight before assembling to insure the perfect balancing of the complete wheel. The dividing wedge in each bucket is ground to a knife edge. The bucket surfaces are carefully designed to the correct curve to cause the water to leave them in a direction nearly parallel to the entering jet, so

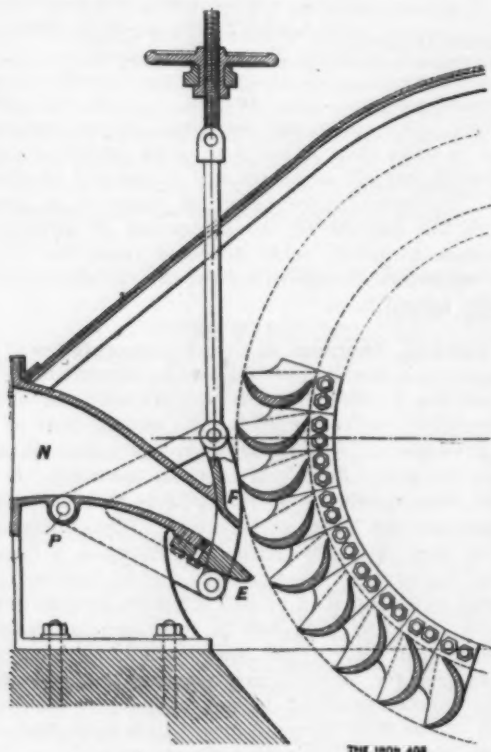


Fig. 2.—A Detail of the Nozzle and Its Relation to the Wheel.

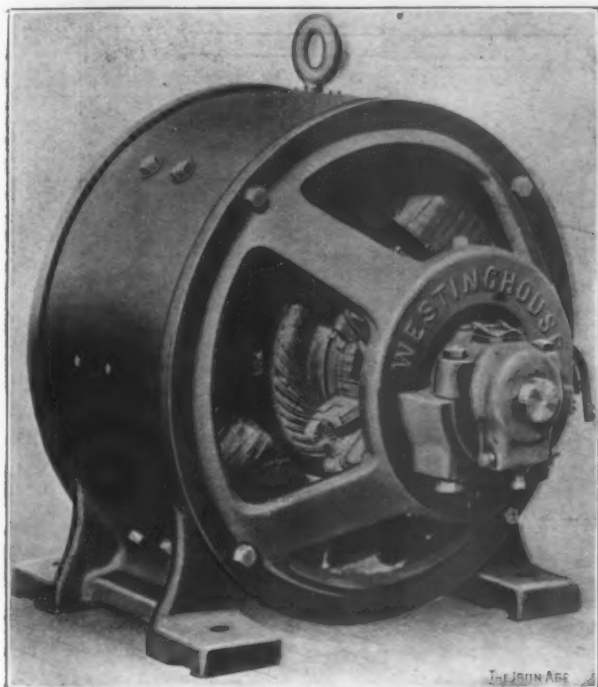
nozzles was regulated by gate valves. The new type of nozzle has the advantage of avoiding eddies at partial openings, the stream being found to be solid and transparent at all stages of opening, and the nozzle efficiency 98 per cent.

as not to interfere with the following buckets and at the correct speeds practically all of the velocity of the jet is absorbed. The shaft is of Siemens-Martin steel 5 inches in diameter with collared journals turned from the solid. The bearings are of phosphor bronze and are ring oiling. To prevent water leaking through at the shaft journals centrifugal splasher rings are mounted on each side. Steel boiler plate riveted to angle irons and calked water tight forms the casing, and to give access to the wheel and nozzle the upper half of the casing is removable.

In addition to the regulating valve there is a sluice valve and a spring loaded relief valve, as shown in Fig. 1. The latter serves to prevent water hammer in case the regulating nozzle should be suddenly closed. The pressure gauge gives a constant indication of the height of the water in the reservoir. While the wheel illustrated is fitted with only one nozzle, where a sufficient quantity of water is available a number of jets may be provided, these to be closed in succession by the governor, or by hand, or by a combination of both.

The Westinghouse Auxiliary Pole Motor.

A new type of variable speed motor for direct current single voltage circuits, having a speed range of 4 to 1, has lately been developed by the Westinghouse Electric &



The Westinghouse Variable Speed Direct Current Motor, Type SA.

Mfg. Company, Pittsburgh, Pa. This motor, known as type SA, obtains its speed variation through field control, and compares favorably with the best direct current constant speed machines.

Mechanically and electrically the new motor differs from the Westinghouse type S motor only in the addition of auxiliary poles and coils. The function of these is to control the form of the field when the field strength is varied, so that a wider range of speeds is possible. These poles are of cast steel and are placed midway between the main poles, being securely bolted to the frame. The construction is simple and introduces no complications, nor does it hamper the removing of the main poles and field coils. An auxiliary pole and its coil can easily be taken out without disturbing the main field winding, by simply disconnecting the coil terminals, withdrawing the bolts which hold the pole to the frame and sliding the pole and coil out parallel to the shaft.

The auxiliary field winding is connected in series with the armature and therefore produces a magnetizing effect which is proportional to the armature current and is directly opposed to it to counteract any distortion

of the field. The auxiliary coils are placed as close to the armature surface as is mechanically possible and their turns are concentrated at that point. This arrangement improves the performance of the motor, as it applies the corrective influence of the auxiliary winding directly at the points where the distorting effect of the armature current is strongest. The resultant field is made up of three components—that due to the shunt winding, that due to the armature reaction and that due to the auxiliary windings. The field distortion usually produced by armature reaction is overcome and the shape of the magnetic field at the point of commutation is maintained as formed by the main poles, so that good commutation is made possible over a wide range of speed.

The type SA motor, being shunt wound, gives a definite speed for each point of the controller, which is practically constant for all loads. Heavy overloads may be momentarily carried without injurious sparking. The motor is reversible without shifting the brushes, and as the armature and auxiliary windings are connected permanently in series it is only necessary to change the external armature connections to reverse the direction of rotation.

The motor develops its full rated output throughout the entire range of speed, and will carry its normal load for six hours with a temperature rise of not more than 40 degrees C. in the armature and field and not more than 45 degrees rise on the commutator. An overload of 25 per cent. may be carried for one hour without injurious sparking.

To show the impracticability of the idea of extracting gold from sea water a paper was read recently before the British Association for the Advancement of Science in which it was pointed out that the amount contained in a given quantity of sea water was much less than is usually allowed to run to waste in the working of gold mines. It is estimated that the ocean contains an average of about one grain of gold per ton. This means an immense total because of the millions of cubic miles of water to draw upon. As a matter of fact, however, the mere cost of pumping the water through any apparatus designed for the purpose mentioned would eat up all the profits. In practical working of mines cyanide liquors containing as much as 100 grains of gold per ton are allowed to run to waste because of the excessive cost of refining any closer, and slimes containing 18 grains, when run through zinc precipitating boxes, have $1\frac{1}{2}$ grains of gold left, which it is considered unprofitable to try to extract.

The city of Tourcoing, situated in northern France, is organizing an international exposition under the patronage of the French Government, to run from May 1 to September 30, 1906. A circular from Henry G. Bayer, special commissioner, 47 Barclay street, New York, solicits American exhibits and states that the cities of Tourcoing, Roubaix and Lille (Nord Department) are so close to each other that they may be considered as one city of nearly 600,000 inhabitants; that the Nord Department, with its 1,870,000 inhabitants, is the wealthiest in France, paying, as it does, one-fourteenth of the total taxation, and having a budget superior to some of the smaller European States; and further, that the district "is incontestably for textiles and some other industries the most important manufacturing district of France, having a constant need of American products and goods."

Concrete piles of an unusual form have recently been tested in New York. They are made by spreading a layer of concrete on wire fabric to which longitudinal rods are attached at intervals. The fabric is immediately rolled up in a special machine of simple construction and the pile then laid aside to harden. It thus contains in addition to the fabric any desired number of vertical rods. In a cross section of the pile the fabric lies spirally from the inside to the exterior of the concrete. If so desired any one of the rods may be made a hollow tube, thus allowing for the use of the water jet process for sinking the pile.

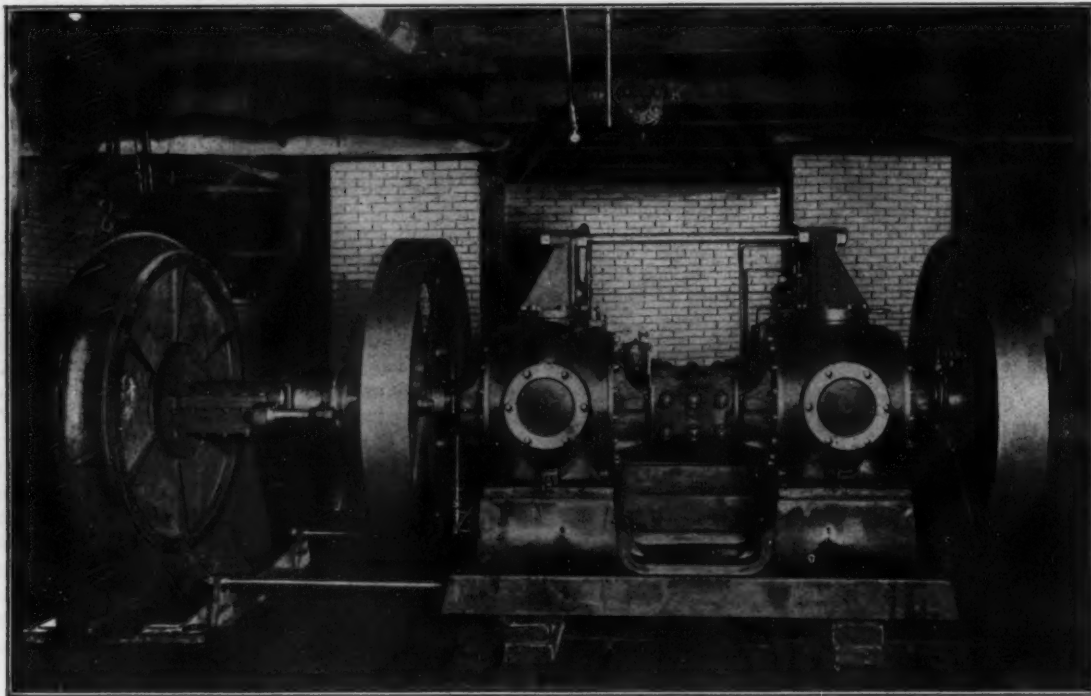
A Mietz & Weiss Oil Engine Pumping Set.

A 70 horse-power Mietz & Weiss double cylinder oil engine, direct coupled to a centrifugal pump, is shown in the accompanying illustration as it appeared on the testing floor at the works of the builder, August Mietz, 128 Mott street, New York City. Six of these combinations of the belted type were recently furnished to F. G. Niedringhaus of St. Louis, one to Bachrich & Co., Vienna, and one to Markt & Co., Java, all to be used for irrigating. The set shown has a capacity of 3500 gallons per minute against a head of 45 feet at a speed of 250 revolutions per minute, the efficiency being 70 per cent. Tested with fuel oil the engine was found to develop one brake horsepower hour on 0.84 pound of oil. The pump has a 15-inch suction and a 12-inch discharge and its maximum capacity is 5000 gallons per minute.

For irrigation work it is of paramount importance that the pumping equipment be of the best economy, hence a set of the type illustrated is of peculiar interest for two

president of the new company, was formerly manager of the National Steel Foundry Company, New Haven, Conn. The other officers are: F. W. Kent, secretary and treasurer, and F. B. Lydecker, sales manager.

On the Volga River an electrically operated freight boat, covering a distance of some 600 miles, is built of iron, with a length of 243 feet and a width of 33. The system of propulsion is the interesting feature of the craft. Three screws are used, each driven by a direct current motor. Current is furnished by three generators in the center of the boat, each driven by a Diesel four-cylinder engine, using crude oil. Proper control of speed and maneuvering ability is had through the control of current to the motors. Current from the dynamos is used also for lighting, pumping and handling cargo. It is estimated that the cost of the outfit (\$30,000), which was supplied by a Swedish firm, is 50 per cent. greater than would have been the cost of an equivalent steam outfit, but as it was desired to use oil, which is very



A 70 Horse-Power Mietz & Weiss Double Cylinder Oil Engine Direct Connected to a 3500-Gallon Capacity Centrifugal Pump.

reasons. Centrifugal pumps are generally conceded to be the most suitable for irrigating work, and with the oil production increasing in almost all parts of the world an oil engine is particularly desirable for furnishing the power. This is especially true in the United States, where the conditions are more favorable to power irrigation than in any other country. With a cost of 4 cents per gallon for the fuel the cost per horse-power is reduced to about $\frac{1}{2}$ cent per hour, or \$3.50 for a 70 horse-power plant, such as shown, pumping 3,000,000 gallons in ten hours. With a full appreciation of the present possibilities it is probable that before long the figures quoted from an authority in the following will be even larger: The total area irrigated in India is about 40,100,000 acres; in Egypt, 6,000,000 acres, and in the United States about 8,000,000 acres, and there is invested in irrigating works in the United States \$67,770,000 and in India \$338,000,000.

The Sims-Kent Steel Casting Works.—A new steel foundry is to be erected at once at Dover, N. J., by the Sims-Kent Company, which has been recently organized. The main building will be 60 x 160 feet, and in addition there will be a boiler and engine house, pattern storage building, office building and other smaller structures. The buildings will be constructed of brick, steel and glass, and the company will devote itself to the manufacture of high grade small steel castings. M. Sims,

cheap in the region covered, the net advantages were thought to favor the system which has been adopted. The oil yields 11,000 calories per kilogram and costs \$9 per ton. Equivalent price of coal of 13,000 British thermal units per pound would be about \$5.50 per ton.

Great results are expected from a recently invented acetylene blow pipe which uses oxygen with the acetylene and thereby produces an enormous temperature, because the flame contains no inert nitrogen. It is claimed that by the heat of such a blow pipe a locomotive frame could be welded. It is also said to offer great possibilities for repair work at sea. A rod of pure iron serves as a "soldering" stick, or make-up supply and it is asserted that some of the carbon from the flame combines with this iron and converts it into mild steel. The superiority of this flame over the oxyhydrogen flame lies in the fact that a much smaller quantity of the gas is required for results. The heat units per cubic meter for the acetylene mixture is placed at 5238 calories, for the oxyhydrogen at 2473 calories.

The annual meeting of the stockholders of the United States Steel Corporation will be held April 16. Proxies are being solicited in the names of J. P. Morgan, H. C. Frick, E. H. Gary, Norman B. Ream and Nathaniel Thayer.

The Sight Feed Oil Pump.

To provide means for feeding an engine with oil of any consistency in regular quantities at timed intervals the oil pump illustrated has been placed on the market by the Sight Feed Oil Pump Company, Milwaukee, Wis. To operate it the driving lever is usually connected to some moving part of the valve mechanism, so that a stroke is given to the plungers of the pump at every stroke of the engine. On a slow moving steam pump this is modified so that for every stroke a double stroke is given the oil pump. Where it is necessary, as in gas engines, to deliver oil at a certain period in the cycle the pump lever is actuated from an eccentric on the valve shaft, which may be shifted so as to drop the oil on the piston at the proper instant.

In the pump illustrated in Fig. 1 each movement of the lever gives a forcing stroke. When the engine stops the pump stops and when the engine is started no attention is required, for the first rotation of the engine causes the pump to deliver oil through its various feed lines. The body of the pump is a single iron casting, faced on the sides and drilled for the plungers and passages. The plungers are of steel, with machine cut racks, and are operated by a long steel pinion connected with the lever as shown. The details of the pumping part may be best seen in Fig. 2.

One plunger in each pump, when only one kind of oil is used, serves to circulate the oil from the tank up through a channel over the drip nozzles, the excess returning through one of the hollow studs back into the tank. This plunger has ample capacity to supply all feeds and

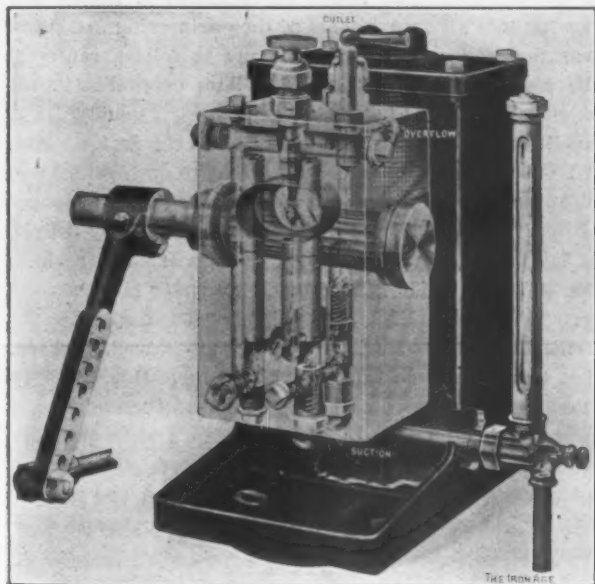


Fig. 1.—Phantom View of the Sight Feed Oil Pump Complete.

the flow of oil is always in excess of the demands. This helps to keep it thoroughly mixed, and the flow past the drip nozzles tends to wash away any particles of foreign matter that might otherwise lodge there. Each discharge line has an independent pumping mechanism, consisting of a plunger, two large ball check valves and a separate discharge line.

The pump illustrated is the smallest size, containing only one of these separate pumping mechanisms. In pumps of larger size the tank and body are longer and additional feeds are arranged for by placing similar plungers and valve trains side by side. At present sizes from 1 to 16 feeds are made, but it is claimed that in point of number this is not the limit.

The amount of oil being fed to any given place is adjusted by the valve shown on the top, and the drops may be seen as they flow down through the recessed cavity in front of the nickel disk. As soon as a drop of oil falls into the hole below the drip nozzles the pump plunger on its up stroke forms a vacuum into which this drop is

drawn. The down stroke then forces it past the check valves and out into the delivery line. In setting up the pump the front check valve only is inserted in the body, and a test of 1000 pounds per square inch oil pressure is applied by operating the lever and plunger by hand. The casting, check valve, plunger, &c., must hold this pressure indefinitely. The rear check valve is inserted as a double assurance against leakage. As a check valve is provided at the discharge end of each line of pipe the line is

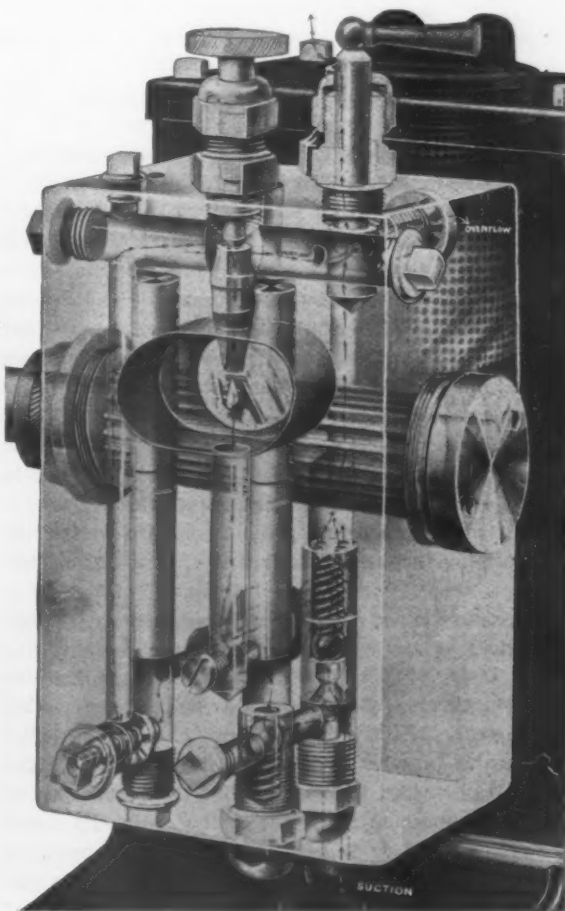


Fig. 2.—Detail of the Pump Proper.

always full, and as soon as a drop is forced by the first check valve a corresponding amount is emitted from the discharge end.

The tank is provided with a threaded cap on the top, under which is a large strainer, readily removable for cleaning. A protected gauge glass shows the level of the oil and provision is made for a steam connection to a heater pipe in the bottom of the tank in case the pump should be placed in a cold location. If it is desirable to feed two kinds of oil a partition may be inserted in the tank and a circulating plunger provided at each end of the pump. Such an arrangement might be required where it is necessary to lubricate the bearings as well as the cylinder.

For locomotive work a similar pump is used, but the pipe connections for the feed lines are different. The principal difference, however, is in the manner of driving, a small motor being used. The motor is practically a double acting self-contained engine, operated by steam or compressed air, preferably the latter. This rotates the gear shaft through an angle of 72 degrees, giving the plungers their proper travel.

An important feature of this type of pump is its ability to handle satisfactorily and continuously a mixture of powdered graphite or mica and oil, and it also claims a remarkable economy in the use of oil. The latter is largely due to its operating only when the engine is running, and also to the fact that the regular feeding of oil in minute quantities is more economical than the intermittent feeding of larger quantities.

THE IRON AGE

1855—1906.

New York, Thursday, March 8, 1906.

DAVID WILLIAMS COMPANY,	- - - - -	PUBLISHER
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Factors in the Business Situation.

Those who at the coming in of the year found occasion for tempering optimistic prophecy concerning business in 1906 in the fact that the skies were so cloudless have already been furnished with a catalogue of reasons for conservative action. Nothing has definitely developed in industry to change the glowing forecasts of two months ago, but that division of the business community that seeks to determine in advance the resultant of the forces at work influencing values has not been idle. A reckless speculation was considered by many to be the inevitable climax of the unparalleled prosperity of 1905. Such speculation has already been checked and the halt in the upward movement of securities, with the decline following, has given opportunity for a soberer inventory of the underlying factors of strength in the industrial situation.

The country is not poorer than it was some weeks ago, when prices of stocks were 10 to 40 points above the level of to-day, but richer. Manufacturing operations show no slackening of the pace that marked the coming in of the year. If there is any change it is toward fuller employment. In spite of the strike in a portion of the building trades work in that line has kept thousands of men busy in the past two months who ordinarily spend that part of the year in idleness. Much was made, on the other hand, of the possibilities of crop disaster following a comparatively snowless winter. But reports of the past week indicate that the condition of winter wheat is not appreciably worse to-day than ordinarily in early March.

The foreign situation has been a subject of speculation in the past two months, but it would seem that something too much has been made of the chances of a European war. The termination of the most disastrous war in a generation was hailed throughout Europe and the Western Hemisphere as the beginning of a new worldwide expansion in industry and trade. It is too soon to expect any serious heed to be given to forecasts of any such international conflict as will shake the foundations laid in the last half year for trade campaigns in every quarter of the world. The Russian revolution caused much apprehension at the beginning of the year. It has now dropped back to a place of minor importance among influences bearing on the immediate future of business in the United States, albeit the possibilities of ultimate loss to the money lending world from financial distress in Russia are not lost sight of.

At home possible strikes and possible legislation engross attention. The long drawn discussion of the harm that might come from introducing a new factor in railroad rate making has so prepared the business world for some form of Federal regulation that the shock of the early proposals of rate legislation has been dissipated. The legislative damage to prosperity which some of the prophets now profess to fear is not so much from railroad legislation as from the modern legislative inquiry

into corporation management. The tendency toward socialism that has been talked about in this connection is perhaps better described as a tendency toward honesty, and as such contains no menace to legitimate business.

Probably the observation most commonly made in recent discussions of the financial and business outlook is that there appears not to be money enough in the country to carry on the present volume of business and an active credit speculation at the same time. The business world is not showing any uneasiness on that account. The embarrassment of too much business is one that the railroads of the country have known much about in the past few years, but it has not been considered a matter for apprehension. As long as railroad and manufacturing profits increase as they have done in recent months the fear that there may not be money enough to go around will not unsettle things. There is to-day a freedom from wildcat schemes and from inflated real estate operations that argues for continued health in trade, and the dangers from overextension of credits seem to be small when the enormous scale of business is considered.

So far as the iron trade is concerned it has borne the test of prosperity remarkably well. Whenever the present period of enormous consumption may give way to a leaner time, there are no indications now that the change can be attributed to excesses within the iron trade itself. The untoward influences discernible to-day are on the outside. The contribution of iron and steel works to the continuance of their own prosperity is no small factor in the account. The heavy expenditures of money now flowing into all departments of the engineering and metal working trades, and those that are to follow, represent the investment of millions of dollars of profits in the extension of existing iron and steel capacity. The condition of the iron trade in respect to the demand upon it has been set forth so clearly and with such reiteration in authentic trade reports week by week that the wonder is that its status should need to be so frequently defined as the questions raised recently have seemed to require. The occasional eddy in the stream that now and then has been pointed to as a sign has only served to emphasize the tremendous strength of the current. It is well, perhaps, that there are those who are ready to question, as every month passes, whether the beginning of the end of the boom is not at hand. In the iron trade and in all other industries, as well as in finance and trade and even in speculation, the questions raised in the past two months may well be regarded as only aids to steadiness and safeguards against excess.

Government Management and the Panama Canal.

A respectful hearing should be given to a man who has been responsible for many years, as general manager of the lines of the Illinois Central Railroad, for the expenditure of more money per annum and who had more employees under him than could ever be spent and ever be employed on the Panama Canal in one year. That man is John F. Wallace, who has only lately broken silence after many months of patient reticence under serious charges, put forward in a passionate manner. So far as the accusation is concerned that Mr. Wallace unpatriotically deserted a brilliant post because more remunerative employment was offered to him, that may be dismissed finally as utterly unfounded. To the country at large a very much graver phase is the consideration of the conditions which drove a strong, experienced and able engineer and administrator from work which might well tempt the most ambitious.

In the March issue of the *Engineering Magazine* Mr. Wallace in a dozen pages explains to fellow engineers those conditions, which we may say have since been emphasized. They deserve the widest publicity because they reveal the defects of Government control over engineering works of all kinds, the Panama Canal being merely a conspicuous and striking example of what is going on all over the country.

Mr. Wallace states clearly that the engineering aspects now excite interest only on account of their comparative magnitude. The whole proposition is one of administration, or, as he puts it, "To my mind the effects upon time and cost which may be exerted by policies of administration and method are much more important than any influences on time and cost pertaining indirectly to the plans themselves. It is my opinion that it will take longer and cost more money to construct a high level canal on the 85-foot plan under present method of Government control than it will to construct a sea level canal, provided the work is accomplished by modern efficient business methods."

Mr. Wallace speaks plainly on the effects of "Government red tape," which he calls system run to seed. He was hampered by it at every step and it is pretty clear from what has been brought out recently by the investigators before the Senate Committee at Washington that there was interference even from persons who possessed no official authority. Mr. Wallace claims from his study of the conditions surrounding the undertaking that only two courses remain to be pursued:

Either the work should be put into the hands of one strong man, with practically unlimited authority, combining the technical and scientific training of the engineer with the administrative and executive ability of a man of force; with this should be coupled the separation of all matters connected with this work from the control of the ordinary Government departments at Washington—but under such supervision only as to insure the Government that his administration is efficient; or the same result should be accomplished through the letting of the work to a contracting firm, large enough to control under one management the entire constructive work on the Isthmus, under broad and general specifications and under such general supervision as may appear to Congress to be proper. The first step of any contracting firm would then be to place its affairs in the hands of a strong single executive, supported by such advisory technical knowledge as might be deemed necessary. The precedent for this method, and a working application of this principle, is the special agreement which was made for the construction for the improvements at the mouth of the Mississippi under Captain Eads. It was a contract which bound the contractor to nothing but certain results for a certain sum, and no more satisfactory compact for public work was ever made by the United States.

That is a plain, straightforward proposition which, while it would appeal to the business men of this country, to the men familiar with and capable of carrying out great engineering undertakings, would hardly appeal to the official mind or to the statesmen at Washington. There is no chance whatever that the authority to build the canal will be placed in the hands of one man, and only a very remote hope that the method adopted for the Mississippi improvements be accepted. It is possible, however, that the Panama Canal enterprise may furnish the proof that for the construction of public works Government control is wasteful and leads to reforms long needed.

Per Capita Production and Consumption of Pig Iron.

In the issue of *The Iron Age* for February 22 editorial reference was made to the apparent consumption of pig iron in the United States in 1905, that is, the amount melted, based on the returns of production and the imports and exports of pig iron as such. The production of 22,992,380 gross tons of pig iron in the United States in 1905 represented a production per capita of 619 pounds,

using the Treasury Department's estimate of population for July 1 of 83,259,000.

The production of pig iron in the whole world in 1905 was in the neighborhood of 53,500,000 gross tons, which would give an average production of 79.3 pounds per capita. In 1903 the per capita production of the United States was 499 pounds and of the whole world 68 pounds. Obviously it was largely the increase in the United States, occupying as it does such a dominant position, which raised the world's average, and it is of interest to determine, even though it can be done but approximately, whether the United States itself consumed so much more pig iron or simply furnished a larger quantity to the world at large in the form of exports.

That there has been a change in the balance of trade in iron and steel in the past three years, not only in quantity but even in sign, is well known. In 1902 and 1903 the balance was against us; the tonnage of iron and steel imported was much in excess of the tonnage exported. In 1904 and 1905, on the other hand, the tonnage exported was much in excess. Accordingly the increase in per capita production of pig iron from 499 pounds in 1903 to 619 pounds in 1905 does not indicate a similar increase in consumption in the United States. It is not difficult to make an approximate estimate of the excess of imports over exports in 1903, reduced to pig iron equivalent, which will be sufficiently close for the purpose. Such an estimate is about 20 pounds per capita, so that it can be said that the actual ultimate consumption of iron and steel in the United States in 1903 was in the neighborhood of 520 pounds per capita.

The balance of trade in 1905 can likewise be estimated. The total weight of those lines of which the tonnage is ascertained amounted in exports to a trifle over 1,000,000 tons, while the weight of imports was somewhat over 400,000 tons. One can readily estimate roughly the quantity of pig iron involved in the manufacture of the different lines. Then there were large exports and relatively unimportant imports of hardware, machinery, tools, &c., running in value to nearly nine figures. Taking all together it can be estimated that the balance of trade represented exports involving between 40 and 50 pounds of pig iron per capita, from which it would follow that the actual ultimate consumption per capita in the United States was in the neighborhood of, say, 575 pounds per capita, against 520 pounds in 1903. While the production per capita has increased 120 pounds the actual consumption appears to have increased but 55 pounds, or less than half as much. Nor would a comparison with 1902, instead of 1903, show much different results, as production, imports and exports were very much the same in both years.

It was but natural that producers themselves should stand aghast that pig iron production in 1905 should exceed that of 1904 by 40 per cent. and that of 1903, the previous record, by 28 per cent. As 1904 was an off year it need not be considered. The increase over 1903 of 28 per cent. in aggregate production becomes an increase of only 24 per cent. when measured as per capita production, while referred to actual domestic consumption per capita the increase becomes less than 11 per cent.

Our iron and steel exports at the present time are of a totally different character from those which have been made in previous export movements. The large pig iron exports from Alabama at one time, for instance, were distinctly a sign of adversity. Those of 1905 could not be so interpreted, because no real adversity was present. The average degree of finish of material now exported, moreover, is much greater. We export but little pig iron, and the tonnage of material which is more finished than rails

is greater than that of rails and less finished material. This export business is bound to grow in both good and bad times.

The world at large does not show up well as a producer or consumer of iron. In 1903 the production of the world outside the United States was 43.4 pounds per capita. In 1905 it had increased to 47.8 pounds. But making allowance for the fact that in 1903 the United States drew from the world at large, while in 1905 it contributed to the world's supply, it can be estimated that the consumption of the world outside of the United States increased from 42.4 pounds per capita in 1903 to 50.4 pounds per capita in 1905.

CORRESPONDENCE.

Hot Versus Cold Galvanizing.

To the Editor: I have made some experiments with electro-galvanized articles, and I can fully bear out the statements made in Ed. S. Mowry's letter, in *The Iron Age* of January 25. Several of my friends have had considerable experience with the cold method, among whom I might mention McCance Brothers' Company, Pittsburgh, Pa.; Standard Galvanizing Company, Philadelphia, Pa.; Chattanooga Roofing & Foundry Company, Chattanooga, Tenn., and the barrel department of the Standard Oil Company, Bayonne, N. J. The first three have, after a long experience, thrown out the cold process and are now using the hot process. The Standard Oil Company used the cold process and perhaps does now use it for galvanizing hoops for barrels, but when it came down to the question of galvanizing its steel naphtha barrels which had to be coated thoroughly it was compelled to put in the hot process.

I have also read the letter of the United States Electro-Galvanizing Company in *The Iron Age*, in which, among other things, it makes much of the fact that the United States navy yards are using the electro process, leaving it to be inferred that they are using it in preference to the hot process. I am not familiar with the facts at any of the navy yards excepting at the Philadelphia Navy Yard, but I am thoroughly familiar with the state of affairs there. It is now operating two or three hot plants, and probably 95 per cent. of its galvanizing is done in these plants. It is true that it has a cold plant, but it is only used for galvanizing very small articles and I am informed that it is using the cold process principally on the sheaves and hooks for its blocks. The reason for this is that the navy yard people have an idea that the strength of the hooks and sheaves is somewhat impaired in the process of hot galvanizing. This, however, I think is a mistake, but be that as it may the fact remains that all the principal galvanizing done at the League Island Navy Yard is done by the hot process.

The failure of galvanized wire and wire fencing to give as good satisfaction now as 15 or 20 years ago is not caused by any defects in the hot process of galvanizing, but is due to the fact that the wire mills, in their system of galvanizing, first put the metal on hot and then take a large portion of it off with a wiper before the coating has had a chance to cool off. If wire were galvanized in the same manner as it was 15 or 20 years ago it would give just as satisfactory results. These same remarks may in a general way apply to galvanized sheet iron. In former days sheet iron was galvanized by the dipping process and the sheets remained in the metal sufficiently long for the coating to become thoroughly incorporated with the iron. Nowadays the sheets are rushed through the kettles by means of a roller process, and the resulting coating on the sheets is not nearly so good as in the old process.

GALVANIZER.

Ferrosilicon or Ferromanganese?

To the Editor: I noticed a communication in the issue of *The Iron Age* for March 1 from a correspondent in

Durango, Mexico, stating that a foundry there had used ferrosilicon in the ladle to soften cupola iron. I think it was probably 80 per cent. ferromanganese and not ferrosilicon that your correspondent saw used, for the ordinary ferrosilicon will not melt in a ladle and ferromanganese would do what he described.

FERRO.

The Railway Steel Spring Company.

President J. E. French submitted the report of the Railway Steel Spring Company's operations in 1905 to the annual meeting of the stockholders in Jersey City March 1. The report shows that the company enjoyed great prosperity during 1905. The net earnings amounted to \$1,949,994, an increase of \$860,051, leaving a balance after paying \$944,977 in preferred dividends of \$1,005,016. During the year the common dividend was increased from 2 to 4 per cent., necessitating the distribution of \$539,988. Instead of a deficit of \$125,015, as in 1904, the income account for the year ended December 31 last showed a surplus of \$465,028, bringing the total surplus to \$2,045,899. The general balance sheet as of December 31 compares with 1904 as follows:

Assets.			
	1905.	1904.	Increase.
Plant	\$24,560,267	\$24,534,215	\$26,052
Merchandise	1,152,736	826,520	326,216
Stocks, bonds and investments.....	764,838	259,102	505,736
Accounts receivable	1,847,353	1,056,568	790,785
Other items	33,285	32,671	614
Cash	1,104,031	2,180,808	*1,076,777
Total.....	\$29,462,510	\$28,889,884	\$572,626
Liabilities.			
Common stock	\$13,500,000	\$13,500,000	.....
Preferred stock	13,500,000	13,500,000	.....
Accounts payable	295,647	194,164	\$101,483
Reserve for preferred dividends and taxes.....	120,964	114,849	6,115
Surplus	2,045,899	1,580,871	465,028
Total.....	\$29,462,510	\$28,889,884	\$572,626

* Decrease.

The retiring Board of Directors was re-elected. The Board of Directors elected W. H. Silverthorn president, to succeed J. E. French, who has been made chairman of the board and head of the Executive Committee. Among other changes made, F. F. Fitzpatrick succeeds President Silverthorn as vice-president, and Frank Carnahan displaces J. C. Beach as treasurer. M. B. Barker succeeds himself as secretary, with F. L. Chapman, Jr., and A. S. Henry as his assistants. Mr. Chapman also is assistant to Treasurer Carnahan.

Powdered Ferrosilicon in the Foundry.

Widespread attention has been attracted by the publication in *The Iron Age* of February 15, 1906, of a summary of the experiments carried on by Alex. E. Outerbridge of Philadelphia in connection with the use of powdered ferrosilicon in the ladle to soften iron coming from the cupola. It can be stated that Mr. Outerbridge has recently repeated his experiments, employing 98 per cent. metallic silicon in powdered form. He found that the iron would not assimilate it as it does the 50 per cent. alloy. It is so light that it floats on the top.

Mr. Outerbridge experimented with 20 per cent. ferrosilicon in 1886 at the time he was making extended tests with 80 per cent. ferromanganese. He found, however, that the molten iron would not dissolve enough of the alloy to soften the metal without an accompanying cooling of the iron. He then heated the alloy before adding to the ladle, but this method was not successful.

Some inquiries have been made as to the source from which 50 per cent. ferrosilicon in powdered form may be obtained. It is handled by the Roessler & Hasslacher Chemical Company, 100 William street, New York. The powder should be sprinkled into the ladle as the iron is tapped into it. This insures melting and thorough incorporation of the addition. The quantity to be used depends on the hardness of the iron and the nature of the castings.

The Pittsburgh Foundrymen's Association.

The regular monthly meeting of this organization was held in Pittsburgh March 5, at the Hotel Henry, the session being preceded by a dinner. About 65 members were present, D. B. Fuller of the Westinghouse Electric & Mfg. Company being in the chair, and F. H. Zimmers of the Union Foundry & Machine Company, secretary.

The paper of the evening, entitled "Molding Sand," was read by H. E. Field of Mackintosh, Hemphill & Co. The paper was briefly discussed by the members present, L. H. Brown of the Interstate Sand Company, Zanesville, Ohio, advocating the adoption as nearly as possible of a set of standards for molding sands to be used by the foundries for the same classes of work. S. L. Slocum of the National Car Wheel Company advocated the rational method of analyzing sand as the better one and preferable to any other. It was the sense of the members that much good could be accomplished by a thorough investigation into the methods of analyzing the different grades of molding sands, and this work will probably be vigorously taken up by the members.

T. E. Ahrens of the Standard Sanitary Mfg. Company, Louisville, Ky., was present and made an address, pointing out the good that is being accomplished by the Pittsburgh Foundrymen's Association in bringing the members closer together and securing frequent interchanges of ideas as to the best methods of conducting the foundry business.

S. L. Slocum made a short address, stating that a movement was under way by the Pittsburgh Foundrymen's Association and the Pittsburgh Traffic Club, with the view of securing a permanent home for these two bodies and other engineering societies. The chair appointed a committee, consisting of Mr. Slocum, J. S. Seaman and William Yagle, to take this matter up and confer with a similar committee from the Traffic Club. It is possible that Andrew Carnegie will be asked for a donation under conditions that he may name.

The secretary reported that a committee had been appointed to arrange for the entertainment of the members of the Philadelphia and Boston foundrymen's associations, which are to meet in Pittsburgh April 2 as guests of the Pittsburgh Foundrymen's Association. An interesting programme is to be prepared and the visitors will be tendered a banquet and vaudeville entertainment. Addresses are to be made by George W. Guthrie, the newly elected Mayor of Pittsburgh, and possibly by George Westinghouse, if he can be secured. Three new members were elected—namely, the Buckeye Sand Company, Bourne-Fuller Company and Midland Steel Company.

Labor Notes.

The members of the International Association of Machinists in the forty-seventh district, which includes the lodges in and about Newark, N. J., are voting on demands to be made on their employers May 1, 1906. These include a nine-hour day, a minimum of 30 cents an hour for machinists and 36 cents an hour for tool makers and die makers, 5 per cent. increase to all machinists now receiving 30 cents an hour or more and to tool makers receiving 36 cents an hour or more, limitation of apprentices and a closed shop.

A demand was made by some of the molders of the Chapman Valve Company, Springfield, Mass., for a closed shop and a shop committee. The firm has always operated an open shop and the demands were refused. The organized men thereupon went out. A number of molding machines have been put in and are being operated by laborers.

John Williams, secretary of the Amalgamated Association, Pittsburgh, has sent notices to all lodges that all desired changes in the wage scale must be at headquarters by March 13. The annual convention of the Amalgamated Association will be held in Cincinnati, opening May 1.

Metal Trades Association Notes.

CINCINNATI, OHIO, March 5, 1906.—The Administrative Council of the National Metal Trades Association will convene at Cleveland March 19 and 20, preceding the regular convention on the 21st and 22d. The Hollenden Hotel will be headquarters for members, a large number of whom have signified their intention of being present. Cincinnati machine tool builders will be well represented at this meeting, as matters of great importance to the association will be presented for discussion and action.

The annual meeting and dinner of the Cincinnati branch of the National Metal Trades Association was held at the Business Men's Club on the evening of March 1. There was a fair representation of Cincinnati machine tool builders present and the meeting proved to be one of more than ordinary interest. The president of the association, P. G. March of the Cincinnati Shaper Company, was in the chair and in his opening remarks referred to the fact that during the year just closing the Cincinnati Metal Trades Association had been merged into the National and that the move had proved to be one of wisdom. He also referred to the labor bills now pending before the Legislature at Columbus and urged the members to do all in their power to the end that wise legislation should be enacted, so that both employer and employee would be placed on a rightful basis, each having the other's interests at heart and willing to adopt such means as should seem best to accomplish the purpose sought. Treasurer O. H. Broxterman of the John Steptoe Shaper Company followed with a report of the finances, which showed the association to be in a flourishing condition. Assistant Secretary Manley then read his annual report, which was well received and showed a gratifying gain in members over that of last year. Secretary H. H. Klusman of Greaves-Klusman & Co. offered the following resolution:

Resolved, That the Cincinnati branch of the National Metal Trades Association, while desiring to co-operate with all organizations in support of our principles, as laid down in the Declaration of Principles, is opposed to any form of merger with any other organization.

This resolution was carried unanimously. Special reference is here made to the proposed merger with the National Founders' Association, which is being championed by friends of both organizations and will be officially acted upon at the coming Cleveland convention.

The officers were re-elected to serve during the ensuing year. Prof. F. X. Schoonmaker, formerly correspondent of the New York Times and foreign editor of the Associated Press, was introduced and made a masterful address on China and the Orient, dwelling particularly on the point that China in the course of a very short time would of necessity develop into a manufacturing nation, and as a result the United States would be called upon to furnish her with practically all of her food supplies, and that consequently a large trade would be the result. Among those present were the following:

P. G. March, N. Chace, Cincinnati Shaper Company; F. A. Geler, E. M. Chace, P. O. Geler, C. W. Walter, Cincinnati Milling Machine Company; W. Laidlaw, W. Thompson, Laidlaw-Dunn-Gordon Company; Wm. Lodge, M. Shipley, Lodge & Shipley Machine Tool Company; I. Raub, Cincinnati Electrical Tool Company; Robert Wuest, National Metal Trades Association; Benj. Sebastian, Sebastian Lathe Company; E. Greenwald, I. & E. Greenwald Company; M. R. Conway, Conway & Co.; J. D. Morten, *Iron Trade Review*; F. R. Lindsley, *The Iron Age*; H. H. Klusman, Wm. A. Greaves, Greaves-Klusman & Co.; C. J. Foerster, J. H. Day Company; O. H. Broxterman, Geo. Otting, Jno. Steptoe Shaper Company; A. Robinson, R. S. Alter, American Tool Works Company; V. Tresise, Ohio Pattern Works; H. Beeler, H. C. Hoefinghoff, Bickford Drill & Tool Company; F. E. LeBlond, R. K. LeBlond Machine Tool Company; Oscar Mueller, Mueller Machine Tool Company; Walter Dolle, National Machine Tool Company; J. T. Howe, Hobson-Houghton Company, New York; L. E. Reichtin, L. E. Reichtin & Bro.; Wm. Herman, L. C. Twachtman, Fostick Machine Tool Company; O. J. Shafer, Globe Pattern Works; Emil Von Wyck, Von Wyck Machine Tool Company; Jno. W. Nell, Jno. H. McGowan Company; B. B. Quillen, G. Langan, Cincinnati Planer Company; N. P. Fenner, American Valve & Meter Company; F. S. Baldwin, S. Schauer, August Teuchter, W. J. Hall, Jr., Cincinnati Machine Tool Company; P. T. Laws, G. W. Steigler, United States Cast Iron Pipe & Foundry Company; L. Pelletier, *Railway Age*; C. F. Kleinsmith, United States Electric Tool Company; L. G. Robinson, J. E. Hirst, J. A. Fay & Egan Company; H. Ritter, C. Ritter, Lunkenheimer Company; G. F. Stewart, Bradford Machine Tool Company.

Steel Casting Syndicates in Germany.

In view of the association existing among a considerable number of steel castings manufacturers in the United States, interest attaches to the report recently made to the German Reichstag on the workings of the two combinations in the steel casting trade in Germany. These are known as the Düsseldorf Steel Castings Syndicate (Stahlformguss Verband of Düsseldorf), and the Upper Silesian Steel Castings Syndicate (Stahlformguss Verband der Oberschlesischen Werk, of Gleiwitz). The information was obtained by the German Home Office and largely from the syndicates themselves.

The Düsseldorf Syndicate.

The Düsseldorf Syndicate is now changing its agreement. Under the old agreement production was not fixed. The syndicate distributes orders received by apportioning them among the members on the basis of the productive capacity of each works. In the case of foreign trade it is provided that, with the exception of Luxemburg and Switzerland, the export market is open to the members. In inland sales members have to conform to the minimum prices fixed by the syndicate's current price-list, and exceptions to this rule are only made in certain specified cases.

Each member is required to furnish to the agency every week a complete list of the orders obtained and the contracts concluded during the week, while once a month an account has to be rendered of the total deliveries to each purchaser, together with a statement of the weight and the amount of the invoices. The agency then communicates the total of the sales to all the works, in order that each of them may be able to ascertain whether it is in advance or in arrears in relation to its quota, and so that it may regulate its future sales, and the delivery figures are also placed before all the works at the same time.

In the settlement at the end of the year the works which have exceeded their quota have to pay into the funds of the syndicate $2\frac{1}{2}$ per cent. of the value of the excess, while the works which have not reached their quota receive from the combination 2 per cent. of the value of the quantity necessary to make up the deficiency. In order to facilitate the apportionment of public contracts each member of the syndicate who proposes to bid informs the agency, in order that the agency may be able to fix the participations and prices. The by-laws impose fines for breaches of the agreement. Fines are fixed by the managing council of the syndicate and members may appeal from the latter's decisions at the general meetings. Securities or money have to be deposited by members as a guarantee. When differences arise the services of the Court of First Instance at Düsseldorf are to be obtained and not those of an arbitrary tribunal, as in the case of other syndicates.

The Upper Silesian Syndicate.

The Upper Silesian Steel Castings Syndicate, first established in December, 1903, for two years, was recently extended to December 31, 1908. It is composed of eight firms. The products placed under the control of the syndicate are enumerated in a price-list which applies to the German Empire, Luxemburg and Switzerland. The following products are exempt from syndicate operations: 1. Castings intended for war material and artillery. 2. Castings made for individual consumption or for manufacturing purposes in a member's works, with the object of being sold. 3. Wheels for mine and portable railroads, wheel sets and accessories. 4. Malleable castings that are sold at least 10 per cent. above the syndicate price. The allotment of orders is on a percentage basis, and if a new member is admitted the denominator of the fractions representing allotments is increased by the quota granted the new member. Members are required to forward on forms to the syndicate agency a weekly return, giving a complete list of orders taken in the week, and a monthly return is made of deliveries, with names, weights and invoice prices. The total of sales is communicated to the members, so that each may judge whether he is in advance of his allotment. At

the end of each year the works which have exceeded their quota pay 5 per cent. of the excess to the syndicate's bank. Members not having reached their quota receive 4 per cent. of the value of the deficiency from the syndicate treasury. Works that are considerably below their permitted output are to be favored by the agency in the case of public lettings, but the agency has to take into account old relations existing between works and customers. Any works desiring to take part in a public letting must notify the agency, so that the latter may arrange the apportionment and prices, with respect to the division of the quotas, the place of delivery and the geographical location of the works. The protective price must exceed by at least 5 per cent. the price the works is to receive for the order. For the expenses of the agency the members send each quarter 1 per cent. of the invoice price of product delivered in the quarter. In addition to meeting working expenses, the sums thus contributed may be applied according to decisions of the managing council.

The Maintenance of Prices.

The syndicate members deal direct with customers. They are required to observe prices and conditions of sale fixed in the syndicate's price-list and are not permitted, directly or indirectly, to offer advantages of any kind to customers. The prices in the syndicate's list are minimum. In the case of transactions between members the prices are not fixed. Where it is necessary to quote cut prices to meet foreign or domestic competition members are authorized to fix lower prices, but this must be done by an understanding with the agency. The managing council is composed of four members, elected yearly. The annual meeting of the syndicate may appoint one or more confidential controllers, who, either by themselves or in conjunction with the general agent, may exercise oversight of the declarations made by the various works, and the works agree to produce their books and documents relating to steel castings for the inspection of the agent and the controllers. The latter are pledged to secrecy except as to cases of irregularity.

Decisions made at general meetings must be by a majority vote and are binding on all members, even though absent. Any violation of the by-laws or of resolutions passed at a general meeting is liable to a fine of \$25. If the transaction is made at a lower price than the fixed price the member making it is liable to a fine of ten times the difference between the two prices, but the fine cannot be less than \$25. Evasion by rebate, by special conditions of payment, bonuses, by purchase of old material, or by a combination with other offers, is equivalent to violation. Money deposits are made by members, guaranteeing the due performance of their obligations.

Territorial Arrangements.

By an agreement between the Düsseldorf Steel Castings Syndicate and the Upper Silesian Steel Castings Syndicate, the provinces of Silesia and Posen are a "zone of protection" for the Upper Silesian works. In those provinces the members of the Düsseldorf Syndicate quote $7\frac{1}{2}$ per cent. above the minimum prices of the Upper Silesian Syndicate. The zone in which the two syndicates compete at equal prices—the schedule being that of the Düsseldorf Syndicate—takes in Saxony and Bavaria (except the Rhenish Palatinate), the provinces of Brandenburg, Pomerania and the East and West of Prussia. A third district is a "zone of protection" for the Düsseldorf Syndicate and the Upper Silesian Works quote $7\frac{1}{2}$ per cent. higher than the minimum of the Düsseldorf Syndicate. In the arrangement as to deliveries in the common zone or abroad, the Upper Silesian Syndicate is given a share in the total deliveries of the Düsseldorf Syndicate, the share on January 1, 1904, being 2.57 parts out of a total of 128.81. The Upper Silesian Syndicate is also party to an agreement between the Düsseldorf Castings Syndicate and the Austro-Hungarian Iron and Steel Syndicate in respect to reciprocal preferences in markets for steel castings.

The scheme for consolidating the companies manufacturing street cars is stated to have fallen through. The options on the plants expired March 2.

PERSONAL.

George H. Baush, vice-president and general superintendent of the Baush Machine Tool Company, Springfield, Mass., has resigned, but retains his financial interest in the company. He has made no plans for the future as yet, proposing to take a rest after 12 years of arduous service as general superintendent. Prior to that time he was vice-president and general superintendent of the C. H. Baush & Sons Company, Holyoke, and was also connected with the Baush & Harris Company.

James S. Stirling, ex-president of the Crescent Shipyard, Elizabeth, N. J., has been appointed superintendent of the Hilles & Jones Company, Wilmington, Del. to succeed Lawrence Jefferies, who has resigned.

Arthur Geisler, who as chief engineer and designer of hydraulic installations for the Platt Iron Works Company, Dayton, Ohio, has been responsible for the recent successes of that company, has established himself in New York, with offices at 170 Broadway, as a consulting engineer, and will devote himself to the specialty of hydro-turbine power plants and hydro-turbine pumping stations. He has been actively identified with water wheel design and installation for practically his entire business life.

Dr. James Douglas, president of the Copper Queen Mining Company of Arizona, and identified during a lifetime with copper metallurgy and mining, has been elected an honorary member of the American Institute of Mining Engineers. Dr. Douglas held the presidency of the institute for two successive terms and has always taken the most active interest in its welfare.

H. C. Atkins, president of E. C. Atkins & Co., saw manufacturers, is chairman of a committee of manufacturers and shippers of Indianapolis, Ind., appointed to organize a shippers' bureau in that city, with a view to obtaining better shipping rates. A well-known railroad man will probably be engaged to act for the bureau in the capacity of commissioner.

Theodore Dwight, for many years assistant secretary of the American Institute of Mining Engineers, has resigned to give his whole attention to mining interests in Mexico. H. W. B. Howard of Brooklyn has been appointed his successor.

S. De Long, secretary and treasurer of the Slatington Rolling Mill Company, Slatington, Pa., has been chosen general business manager and will attend to the duties of the former president, Edward Edwards, deceased.

John F. Wallace, formerly chief engineer of the Panama Canal, has formed a connection with the Westinghouse interests, and it is stated that he is to assist in building electric railroads paralleling steam railroad lines in many parts of the country.

Joseph Wharton, Philadelphia, the well-known ironmaster, president of the American Iron and Steel Association, received the congratulations of many friends on reaching his eightieth birthday on Saturday, March 3.

E. E. Ellis of the United States Geological Survey has resigned to accept a position with the United States Steel Corporation at Duluth, Minn.

Robert Simpson has been made superintendent of the Bessemer (Ala.) rolling mills of the Tennessee Coal, Iron & Railroad Company, succeeding T. J. Kent, who recently went to the Sydney works of the Dominion Iron & Steel Company.

E. R. Elliott has resigned as superintendent of the Negaunee, Mich., mines of the Cleveland Cliffs Iron Company to become manager of the iron mines of the Juragua Iron Company in Cuba.

Louis W. Southgate, Worcester, Mass., announces that Albert E. Fay has been associated with him in the practice of patent law from March 1. Mr. Fay was an assistant examiner in the United States Patent Office for five years and for the past two years has been a practicing patent attorney in New York City. The business will be conducted as formerly under the firm name of Southgate & Southgate.

John F. Lent, Park Building, Pittsburgh, has been appointed traffic manager of the Pittsburgh Bridge & Iron

Company, whose offices are in Pittsburgh and plant at Rochester, Pa. This makes 13 large shippers for which Mr. Lent is traffic manager.

Edward Worcester, first vice-president and manager of sales of the National Tube Company, Pittsburgh, has returned from a business trip to the Pacific Coast. While there Mr. Worcester visited George S. Garritt, who has charge of the company's San Francisco office.

W. P. Siebert, assistant manager of rail and billet sales for the Carnegie Steel Company, is in California and will remain there until about April 1.

Sumpter Lee, Jr., has tendered his resignation as superintendent for the Sloss-Sheffield Steel & Iron Company at Coalburg, Ala., for the purpose of practicing his profession as civil and mining engineer at Birmingham, Ala.

Geo. S. Lacey has been appointed assistant purchasing agent of the Republic Iron & Steel Company in charge of mill supplies. He will be located in Pittsburgh, while Walter L. Lee, the purchasing agent in charge of this department, will continue to have his headquarters in Chicago, although the remaining departments of this company are now removed to Pittsburgh.

The resignation of W. L. Jones, general purchasing agent of the International Harvester Company, Chicago, which he tendered January 1, to become effective June 1, has just been accepted. Mr. Jones is at the present time in California on an extended vacation, enjoying a much needed rest.

G. G. Schade, formerly of the Braddock Machine & Mfg. Company, Braddock, Pa., is now connected with the Fort Pitt Bridge Company, Pittsburgh, works at Cannonsburg, Pa.

Joseph E. Gay has been elected president of the Wolverine, Mohawk and Michigan copper mining companies, succeeding the late John Stanton. The selling of the copper will be conducted as formerly through the offices of the companies at 15 William street, New York city.

Benjamin Talbot, the inventor of the Talbot steel process, is now in this country.

Robert W. Hunt, Chicago, has been elected president of the American Institute of Mining Engineers, succeeding James Gayley. This is the second time that Captain Hunt has presided over the affairs of the institute.

OBITUARY.

EDWARD EDWARDS, president of the Slatington Rolling Mill Company, Slatington, Pa., was attacked by a stroke of apoplexy at the company's office February 21, and died the same day at his home at Catasauqua, Pa. He was 64 years of age.

GEORGE H. GEYER, formerly superintendent of the South Side plant of the Jones & Laughlin Steel Company, Pittsburgh, died February 28 after a long illness.

HENRY RUSTIN, Florence, Neb., expert on electrical illumination, who designed the displays for the Omaha, Buffalo and St. Louis expositions, died February 27, aged 41 years.

WILLIAM H. SHERIDAN, exporter of machinery and mill supplies, 45 Centre street, New York, died from pneumonia March 5, after a short illness, aged 40 years. He was born in Brooklyn.

The Pennsylvania Railroad Company's gross earnings of all lines east and west of Pittsburgh for the year 1905 were \$266,069,597.76; operating expenses, \$192,100,348.42, and net earnings, \$73,969,249.34, an increase in gross earnings compared with 1904 of \$28,853,177.63, and an increase in net earnings of \$8,266,289.37. There were 333,011,237 tons of freight moved, being an increase of 48,191,297 tons, and 126,084,223 passengers carried, an increase of 5,668,005.

NEWS OF THE WORKS.

Iron and Steel.

The Boyne City Charcoal Iron Company, Boyne City, Mich., made an output of about 25,000 tons in the first year's operations of its furnace. It is now averaging about 80 tons a day. Located close to the plant of the Boyne City Chemical Company, the furnace company secures from that company most of the 6000 bushels of charcoal a day required by the furnace. The chemical company will enlarge its capacity in the coming summer so that it will be able to furnish the entire charcoal supply. Fred. Smith is the manager of the furnace. The secretary and treasurer of the company, Noah W. Gray of Marquette, Mich., has been connected with charcoal iron manufacture for the past 34 years.

The Southern Steel Company, formerly known as the Alabama Steel & Wire Company, will make extensive improvements and enlargements to its open hearth steel works and wire rod, wire and wire nail mills at Gadsden, Ala., and will spend at least \$500,000 in enlarging the plant. Present plans contemplate the building of two new blast furnaces and two or three open hearth furnaces. In the rod, wire and wire nail mills large additions to equipment are to be made, and the wire nail mill, which was burned recently, will be entirely rebuilt and its capacity enlarged. The wire fence department will also be enlarged and its capacity about doubled. The company is opening new coal mines at Virginia City, Ala., and 100 coke ovens will be built.

Andover Furnace, at Phillipsburg, N. J., will blow in about April 1. Joseph Wharton, owner of the property, has land staked out for the erection of another furnace at that point.

The Ohio Iron & Steel Company, operating Mary Furnace, at Lowellville, Ohio, has purchased a tract of about 60 acres of land adjoining its blast furnace which will probably be utilized for improvements, the exact nature of which has not yet been determined. The report that this company had decided to build a new blast furnace is premature.

The Taunton Steel Company, Taunton, Mass., has been organized under Maine laws. The company proposes to manufacture drill rods from self hardening and carbon steel. H. A. Williams is the president and E. A. Tetlow, treasurer, both of Taunton.

The Lockhart Iron & Steel Company, McKees Rocks, Pittsburgh, will install new 12 and 16 inch bar mills, to be built by the Mesta Machine Company, Pittsburgh.

The Musconetcong Furnace, at Stanhope, N. J., is expected to blow in on March 20.

The Gem Furnace of the Allegheny Ore & Iron Company, Clifton Forge, Va., was blown out on February 25.

Stockholders of the Tidewater Steel Company, Chester, Pa., have received circulars from committees of the common and preferred stock, with the view to pooling their holdings and disposing of the plant, which has been idle for some time.

The Wilmington Iron Company, recently organized, has taken over the plant of the Johnson Forge Company, Wilmington, Del., which it will shortly put in operation. Charles Zehnder of the Scranton Bolt & Nut Works, will be president of the company.

The Ashland Iron & Mining Company, Ashland, Ky., has let contract to D. Lamond & Son, Pittsburgh, Pa., for remodeling and raising its No. 2 Ashland furnace to 75 feet in height and rebuilding three Foote 16 x 75 foot stoves. The Kelly Brick Company, Ashland, Ky., was given the contract for the brick for the stoves and the Ashland Fire Brick Company the brick for the stack.

General Machinery.

The Ohio Cultivator Company, Bellevue, Ohio, has installed a No. 66 Newton cupola of 10 tons capacity, and the Cherry Valley Iron Works, West Middlesex, Pa., is installing a 15-ton Northern crane of 46 feet span, both made by the Northern Engineering Works, Detroit, Mich.

Actual work of construction of the Cotton Belt Railroad car factory buildings has commenced at Pine Bluff, Ark., and it is expected that the plant will be in operation in 60 days. It will have a capacity of 40 cars per day and turn out all grades, from finest passenger coaches to the average freight car.

The Union Gas Engine Company, San Francisco, Cal., has purchased a tract of 6¼ acres in East Oakland. On this property the company is erecting three new buildings, one for the storage of patterns and drawings, one to be used as a machine shop and a third to be used for testing engines. The machine shop will be 130 x 300 feet and will have a gallery on each side 200 feet long. In the main bay a 15-ton electric traveling crane will be installed, with a 2-ton auxiliary hoist, and four smaller traveling cranes will be put in the other bays. The building to be used for testing engines will be 35 x 85 feet and will be equipped with a traveling crane and other modern appliances for testing engines of all sizes. Other buildings will be erected later, including a foundry. Considerable of the machinery has been ordered and will be installed as soon as possible.

The Elcher Company, Alliance, Ohio, reports an unusually large demand for light drop forgings, automobile and car forgings and its Simplicity lock nut.

The Winans Mfg. Company has been incorporated at Marion, Ind., with \$15,000 capital stock, to manufacture and sell machinery, supplies, &c.

The Adrian Pulley Company, Adrian, Mich., has been organized to take over the Eames Pulley Company, Three Rivers, Mich. The new company, which is capitalized at \$25,000, is officered as follows: President, Vernon Hoxie; vice-president, D. L. Merrill; secretary, John E. Carr; treasurer and manager, W. L. Dunbar. The company will manufacture the Eames combination split pulleys, Adrian wood split pulleys and transmission machinery.

The Portage Lake Foundry & Machinery Company, manufacturer of general mining and milling machinery, Hancock, Mich., has recently shipped one 18 x 24 inch Blake crusher, weighing about 50,000 pounds, to the United States Smelting Company, Bingham Junction, Utah, and one 24 x 24 inch crusher, weighing about 100,000 pounds, to the United States Lime Company, Topliff, Utah. The company manufactures the Blake crusher in sizes ranging from 7 x 10 inch to 36 x 36 inch. A transfer of stock was recently effected by which the Portage Lake Company acquires the plant and business of the Hodge Iron Company, Houghton, Mich. The business of the latter company will be conducted as heretofore, except that it will be under the direction of the new owner.

The Winnfield Iron Works, Stamps, Ark., has been incorporated with a capital stock of \$15,000 to conduct a foundry and machine shop. The incorporators are Robert Buchanan, J. D. Musgrave, T. A. Brown, Cleo Lynn, V. E. Florence, W. R. Roney, O. E. Hodges and the Porter-Wadley Lumber Company.

The Sibley Machine Tool Company, South Bend, Ind., is increasing its facilities by the addition of 3000 feet of floor space to the machine shop and 6000 feet of space to the foundry. The company makes a specialty of power drills.

Maurice C. Trumbull, Red Bird, Ark., is in the market for dry kilns, electric light wire, molding machines, timber sizer, matchers and chain mortiser.

The St. Anne Kerosene Motor Company, St. Anne, Ill., has been incorporated with a capital stock of \$100,000 to manufacture motors. The incorporators are B. H. Pomeroy, A. Sutton and W. A. Quertim.

The Buffalo Forge Company is, as usual, well employed on contracts for heating and ventilating installations for railroad work. Among these are complete outfits for the shops of the Queen & Crescent Company, at Somerset, Ky., and for the boiler, tank and carpenter shops of the Buffalo, Rochester & Pittsburgh Railroad, at Du Bois, Pa., and large ventilating fans and engines for the Erie Railroad for the Bergen tunnel; also for the heating, ventilating and equipment of the following roundhouses: Southern Railway, Monroe, Va., 18 stalls; Atchison, Topeka & Santa Fe Railway, Emporia, Kan., 32 stalls; Illinois Central Railroad, Burnside, Ill., 23 stalls; Missouri, Kansas & Texas Railroad, Parsons, Kan., 32 stalls.

The New Jersey Aluminum Company, Newark, N. J., is to enlarge its plant by the erection of a four-story building, 50 x 90 feet. Other important improvements are to be made, in order that the company can increase its capacity to take care of its growing business.

It is not likely the J. E. Henry & Sons, Lincoln, N. H., will require any new machinery, as it finds that it can repair most of the machinery and the building, which were recently damaged by fire.

The roundhouse of the Missouri Pacific Railroad at Downs, Kan., was recently destroyed by fire, and plans have not yet been prepared for rebuilding.

The Louisville Tin & Stove Company, Louisville, Ky., is erecting a four-story brick building, 158 x 150 feet, at a cost of \$50,000.

Power Plant Equipment.

The H. N. Strait Mfg. Company, Kansas City, Mo., has the contract for the installation of a new 500 horse-power Monarch Corliss engine at the plant of the O. J. Beaudett Company, manufacturer of vehicle, sleigh and gear woods, Pontiac, Mich.

The Electric Supply & Construction Company has been incorporated at La Crosse, Wis., with a capital of \$10,000 and Robert J. Nichols, Will D. Burford and E. D. Burford as incorporators.

The City Council of Mt. Vernon, Ind., has granted to Thomas Rankin of Chicago a franchise for a gas light, power and heating plant. The estimated cost is \$30,000.

The Ducro Mfg. Company has been incorporated at Buffalo, N. Y., to manufacture motors for boats, machinery, &c., with a capital stock of \$5000. The incorporators are L. C. Ducro, Chas. Jempsoe and E. S. Ducro.

The Weir Brothers Paper Company, Chicago, is in the market for a 75 horse-power second-hand automatic engine, preference being given to a Buckeye or Fitchburg type.

The Westinghouse Electric & Mfg. Company, Pittsburgh, has recently received a very large contract for electrical equipment for shipment to Brazil, said to be one of the largest contracts for electrical equipment it ever secured. The Pennsylv-

vanla Railroad Company has placed a contract with the company for four rotary converters aggregating 5000 kw. capacity and for 12 transformers and other auxiliary apparatus. These are to be duplicates of 18 machines furnished about two years ago. The railroad equipment department 's crowded with orders and is working day and night.

Foundries.

The National Radiator Company, Johnstown, Pa., has increased its capital stock from \$100,000 to \$350,000, and has purchased 1½ acres of additional land from the Lorain Steel Company, on which it intends to build extensions to its plant to cost between \$75,000 and \$100,000. These improvements will include a brick extension to the foundry, 150 feet long, which will double the present capacity, and a warehouse several times the size of that now in use. The present warehouse is to be converted into an assembling room. The equipment has been secured.

The Pratt & Letchworth Company, manufacturer of malleable iron and steel castings, &c., Buffalo, N. Y., is adding to its plant a one-story brick and iron foundry, 140 x 180 feet.

The Walsh Brake Shoe & Foundry Company, Rock Island, Ill., is rebuilding its foundry, which was recently damaged by fire.

The Geneva Foundry & Machine Company, Geneva, Ill., has purchased a complete equipment of machinery for the new foundry which is being established at Aurora, Ill. The equipment includes a cupola, engine and a number of machines and parts.

E. B. Gilmore, Peoria, Ill., has leased the idle foundry of the John Hutchinson Mfg. Company, Jackson, Mich., and will later incorporate under the style of E. B. Gilmore & Co. Mr. Gilmore has already closed a contract with the Cement Sewer Pipe Company, Jackson, for 400 tons of castings.

The Eastern Wisconsin Railway & Light Company, Fond du Lac, Wis., is in the market for 12 miles of gas pipe in sizes 10 x 6 x 4 inches. Bids will be received until April 1.

The Scullin-Gallagher Iron & Steel Company, St. Louis, Mo., has purchased three tracts of ground adjoining its present works, lying between the Missouri Pacific and the 'Frisco Railroad tracks. The tracts are 12, 5 and 8 acres in area, respectively, and were purchased to round out the company's property, which now covers a total of 83 acres. The steel works are now undergoing extension, which, when completed, will have about 2 miles of private track. The company has its own engines, switching crews, &c., and by doing its own switching is able to handle all material in and out bound promptly.

Bridges and Buildings.

The Des Moines Bridge & Iron Works, Des Moines, Iowa, has increased its capital stock from \$150,000 to \$250,000 and will make some improvements in its plant and increase the working capital.

The W. T. Young Bridge Company, Nashville, Tenn., was awarded the contract at \$51,490 for the construction of a steel highway bridge across the Cumberland River at Carthage, Tenn. The bridge will be 1100 feet in length and will consist of two main spans of 265 feet each, one span of 133 feet and 447 feet of steel trestle work. Work will begin on the construction of the bridge about May 1.

Fires.

The plant of the Toledo Metal Sign Company, Toledo, Ohio, was destroyed by fire March 1. The loss is placed at \$25,000.

The Oxford machine and repair shops of the People's Coal Company, Scranton, Pa., were destroyed by fire last week.

The building of the Wrought Iron Range Company, St. Louis, Mo., was destroyed by fire March 6. The loss is placed at \$60,000.

Hardware.

J. A. Engel & Co., manufacturers of farm implements, Peoria, Ill., have purchased the property and plant of the Peoria Tool & Steel Company in East Peoria and will remodel the buildings for their own occupancy. The firm has outgrown its present plant and the new quarters will afford excellent facilities for further expansion.

The Standard Mfg. Company, Aurora, Ill., has incorporated under the new name of the Richards Standard Mfg. Company. The company manufactures rural mail boxes, brass castings and hardware specialties. In it are interested M. C., C. H., R. E. and G. H. Richards.

The Wapak Anchor Company, Wapakoneta, Ohio, has incorporated with a capital stock of \$25,000, to sell the Wapak anchor, patented August 30, 1904. Arrangements have been made to have the anchor manufactured by the Wapak Hollow Ware Company. The latter company has increased its capital stock from \$40,000 to \$50,000 and is enlarging its plant. The incorporators of the new company are S. L. Wilcoff, W. J. Emmons, S. P. Hick, Katherine Hick and Arlo Hick.

The Colonial Mfg. Company, Zeeland, Mich., has been incorporated with a capital stock of \$35,000 to manufacture hall clocks and novelties. The company has purchased a 4-acre site and will build a modern plant.

The United States Hoe & Tool Company, Columbus, Ohio, has been compelled to put on an 11-hour force to meet the large

demand for the company's hoes and shovels, principally from the Southern States.

The Kansas City Bolt & Nut Works, Sheffield, Kan., is to be enlarged. It is estimated that \$100,000 will be expended in the improvements. When they are completed 200 more men will be employed, making the total force 700.

The Samson Cordage Works, Shirley, Mass., is to erect an addition to its plant, 93 x 158 feet and two stories.

It is planned to reorganize the Sewing Machine Cabinet Company, Bridgeport, Conn., which formerly manufactured the cabinets used by the Wheeler & Wilson Mfg. Company, now merged in the Singer Mfg. Company. It is understood that the Singer Company will hereafter manufacture its own cabinets, but the Sewing Machine Cabinet Company had other large customers, including the American Graphophone Company. It is proposed to organize a new corporation, with capital stock of \$200,000, and to extend the general line. The prime movers in the enterprise are former employees of the company, including George Irving, James E. Camp, G. William Camp and Owen Toolan. The plan is to occupy the factory formerly the plant of the Liberty Cycle Company.

The Anderson Computing Scale Company has been incorporated at Anderson, Ind., with \$50,000 capital stock, to manufacture scales, cheese cutters, &c. The directors are John H. Osborne, George A. Lambert and B. O. Barnes.

F. E. Myers & Bro., Ashland, Ohio, report that the loss by fire some time since of their shipping warehouse and a large amount of finished goods has not entailed any delay in filling orders. Shipments during January and February were larger than for the same period a year ago, and future business on their books is the largest in their history. The increased capacity of their works by the addition of a large new machine shop and a 50 per cent. increase in the capacity of their foundry, with day and night forces, has enabled them to take satisfactory care of their customers, and they are in position to make prompt shipment of all orders.

Trenton Machine Works & Supply Company, Trenton, Tenn., has increased its capital stock from \$7500 to \$12,500, so that the company may be in a position to manufacture the Trenton gasoline pea hullers on a larger scale than formerly.

The Novelty Foundry & Machine Works has been chartered at Nashville, Tenn., with a capital stock of \$35,000. L. M. Shepard, T. O. Perkins, J. A. Burton, E. H. Roy and A. P. Foster are the incorporators. The purpose is to manufacture hardware supplies and novelties.

The Clipper Lawn Mower Company, Dixon, Ill., manufacturer of pony and hand mowers, is building a new plant, which, when completed, will provide greatly increased manufacturing and storage capacity. The building under erection is 40 x 150 feet, three stories high, and another building already on the site is 25 x 95 feet, one story in height. The two buildings will give the company a total floor space of 18,000 square feet. In addition to manufacturing lawn mowers the company expects to produce marine gasoline engines.

Miscellaneous.

The Union Switch & Signal Company, Swissvale, Pittsburgh, builder of automatic railway signals, booked orders for January amounting to about \$2,000,000. This business consisted of orders for automatic block signals and also for power and interlocking switches. Some of the orders received for electric signals are of astonishing magnitude. The company has increased the capacity of its various departments from 10 to 75 per cent., is giving employment to 2132 men and is doing a very much larger business than at any previous time in its history.

The Wallace-Owings Machinery & Supply Company, Denver, Col., has purchased property where it will install a 50-ton concentrating plant, with the intention of increasing it to 150 tons capacity later on. Lead and zinc ores will be handled.

The Niles Car & Mfg. Company, Niles, Ohio, is about to build a large addition to its plant. This company is giving employment to about 175 men and has a large number of orders on its books.

Stockholders of the Bessemer Coal & Coke Company, Pittsburgh, will meet April 21 to vote on a proposition to increase the capital stock to \$500,000.

The Old Colony Coal & Coke Company, Pittsburgh, operating in the Connellsville region, has elected A. Rasner, president; B. H. Schewe, secretary; A. H. Schewe, treasurer, and W. G. Cronkright, general manager.

Dr. A. H. Hoyt, Penacook, N. H., is to build a new factory for the manufacture of electrical specialties and scientific apparatus. The new shop will contain about 1500 square feet of floor space.

The General Railroad Signal Company of Buffalo has been awarded the contract for installing a new automatic block system on the New York Central Railroad between Buffalo and New York. The contract calls for an expenditure of \$2,000,000 for the complete installation.

The American Steel & Wire Company has placed a contract with the American Bridge Company for the building of 10 steel barges, to be used in the Pittsburgh harbor and for hauling coal from its mines along the Monongahela River to its plants

at Rankin, Pa., and to the Shoenberg works in Pittsburgh. The American Bridge Company is also building at its works at Ambridge, Pa., two rectangular hulls, 30 x 130 feet, for five yard dipper dredges to be used on Panama Canal work, and a steamboat hull for James Rees & Sons, who have the contract to build a Mississippi River packet.

Tate, Jones & Co., Incorporated, engineers and manufacturers, Pittsburgh, works at Leetsdale, Pa., have received an order from the General Electric Company to equip four 20-ton open hearth steel melting furnaces with an oil pumping, heating and regulating system for drawing the oil from the tank and feeding it to the burners at a uniform pressure and at the same time heating and straining the oil. Each furnace is provided with two of the firm's special patent burners, mounted on swinging stands, by which the burner at one end is thrown out of the furnace and the opposite burner thrown in when the furnace is reversed. Orders have also been received for similarly equipping a 15-ton furnace for the Detroit Steel Casting Company, Detroit, Mich., and a 20-ton furnace for the Bethlehem Steel Company, South Bethlehem, Pa. The firm has contracts for equipping a 15-ton furnace for the Monarch Steel Casting Company, Detroit, Mich., and a 15-ton furnace for the Cincinnati Steel Casting Company, Cincinnati, Ohio, and is also figuring with a number of open hearth steel casting companies for equipments to be installed for use in emergencies, such as shortage of gas, trouble in getting coal, &c.

The Excelsior Automobile Supply Company, Chicago, has been incorporated with a capital stock of \$10,000, to conduct an automobile supply and tire business at 1436-1438 Michigan avenue. The incorporators are Harrison Musgrave, James B. Gascoigne and John A. McKeever.

The Western Electric Company, Chicago, recently let contracts for the construction of three new buildings for its plant. One of these, an addition to the cable department, will be one story high, 100 x 450 feet, costing about \$87,000; another, an addition to the carpenter shop, will cost \$11,000, and the third, a coal storage building, will cost \$47,000. F. E. Davidson is the company's architect.

The Reynolds Car Brake Company, Peoria, Ill., has been incorporated with a capital stock of \$50,000, by Andrew O'Neill, Aldo E. Reynolds and Samuel D. Wead. The company purposes the manufacture of a mechanically applied friction brake for use on electric cars. The basic principle of the brake is that the momentum of the car tightens a clutch formed by two cones, the clutch applying the regular brake shoes to the car wheels. The cone clutch is operated by an 8-inch lever, one of the two cones being thrown into and engaged with the other cone, which is fastened to one of the car wheels.

The Elkhart Brass Mfg. Company, Elkhart, Ind., has recently greatly increased its manufacturing facilities by the purchase of the entire machinery plant of the Acme Cycle Company of the same city. The Elkhart Brass Company is making a full line of fire department supplies, plumbing supplies, automobile oil guns and automobile parts. During the past year in particular there has been a gratifying increase in the company's business and during the past two weeks several important contracts have been made with prominent concerns.

The Ohio Iron & Metal Company's New Offices.—The Ohio Iron & Metal Company, with main offices in the First National Bank Building, Chicago, has recently opened offices in leading centers which form a chain from New York to St. Louis. About two months ago an office was opened at Pittsburgh, of which A. M. Crane was placed in charge, selling in addition to scrap material of all kinds pig iron, coal and coke. An office has now been opened in the Citizens' Building, Cleveland, and also in the Chemical Building, St. Louis. A branch has been maintained at New York for four years, now located in the Trinity Building, 111 Broadway. The company has been in business for about 20 years. Moise Dreyfus is president; Achille Levy, vice-president, and Samuel Deutsch, secretary and treasurer.

Members of the Milwaukee Engineering Society were guests of the Merchants' and Manufacturers' Association, Milwaukee, Wis., Tuesday evening, March 6, at a "Smoker on Smoke," at which the question of suppressing the smoke evil was discussed from a technical and practical standpoint. R. S. MacPherran, chief chemist of the Allis-Chalmers Company, talked on "Chemistry of Combustion"; R. L. Tomlinson, also of the Allis-Chalmers Company, responded to "Mechanical Stokers as Related to Smoke Prevention"; George M. Conway talked on "General Devices for Smoke Prevention"; Charles Poethke, city smoke inspector, discussed the legal phases of the question.

La Belle Iron Works Buys Pope Tin Plate Company.

PITTSBURGH, PA., March 7, 1906.—(By Telegraph.)—At a special meeting of the Board of Directors of La Belle Iron Works, held yesterday at Steubenville, Ohio, it was decided to purchase outright the interests of the Pope Tin Plate Company, which operates a 12-mill plant in the same city. The price is to be \$125 per share. The capital stock of the Pope Tin Plate Company is \$750,000, of which \$650,000 was paid in, so that the new owners pay for the plant \$812,500. At present the La Belle Iron Works has a daily surplus of about 500 tons of steel, which it sells in the open market, and the principal object in buying this tin plate mill is to have an outlet for the steel and avoid selling it in the open market. The company is well equipped to roll tin bars and in fact has furnished the Pope Company its supply for a long time.

The entire product of the Pope Tin Plate Company has been bright plates. The purchase of its plant by the La Belle Iron Works is regarded as a most excellent piece of work, as it will be able to operate the tin plate factory to the very best advantage and at the very lowest possible cost. The La Belle Iron Works has plans under way for the building of additional finishing departments to comprise sheet and jobbing mills, work on which will be started in a short time. It is also its intention later on to add three open hearth furnaces and a metal mixer to its plant. The company manufactures pig iron, billets, sheet and tin bars, plates, pipe, cut nails and other lighter lines of product. It is self contained, having its own ore and coal properties.

Copper Holding Company Organized.—The Butte Coalition Mining Company, which was formed by John D. Ryan, president of the Anaconda Copper Company, and Thomas F. Cole, president of the Oliver Iron Mining Company, to bring about a settlement of the copper war, was organized on February 27, with Mr. Cole as president and Mr. Ryan as vice-president. In addition there are on the board of directors Benjamin Thayer of the Amalgamated Copper Company; Urban H. Broughton, president of the Utah Consolidated Mining Company and treasurer of the United Metals Selling Company, the Amalgamated's selling agency; C. Carson, who took over the Heinze mines which were purchased by Mr. Cole for the new company; James Hoatson, president of the North Butte Mining Company, in which Mr. Cole is heavily interested; Frederick L. Ames of Boston; W. B. Dickson, second vice-president of the United States Steel Corporation, and Chester A. Congdon of Duluth.

Two plans for a high speed electric railway between Berlin and Hamburg are under consideration. One, which provides for a single track road, is estimated to involve the expenditure of \$18,500,000, while the other, double track, would cost \$39,000,000. In both plans the idea is for a nonstop run between the termini at a speed of about 90 miles per hour. It is thoroughly realized that great technical difficulties will have to be overcome in making the project a success. It is proposed to construct a road wholly without switches, although this is recognized to involve great inconveniences, due to the great length of road without sidings. With the double track line the inconvenience would, of course, be minimized.

Material and commercial developments of the world during the past century form the subject of a recent statistical article. The developments can nearly all be traced, directly or indirectly, to the immense improvements which the century has witnessed in facilities for intercommunication between the several continents and nations. The period under discussion has witnessed the entire development of all systems of electric telegraphs and cables, of all navigation by steam, of all railways. As a direct result the world's international commerce has advanced from \$2,000,000,000 to \$22,000,000,000, and the commerce of the Orient from \$190,000,000 to \$2,850,000,000 per year, or fifteenfold.

The Iron and Metal Trades

So far as new business is concerned, in nearly all lines of crude and finished Iron and Steel the week has been a very dull one. As indicative of the situation, the statement may be made that the United States Steel Corporation is booking new business at the rate at which deliveries are being made, no business for very distant delivery being taken and orders being closely scrutinized to prevent speculative purchases. The volume of business may therefore be designated as normal, in contrast with the extraordinary volume during the winter months.

In some branches the large consumers are being approached with the object of securing a renewal of contracts which expire on July 1. This is notably the case with makers of Agricultural Implements for their requirements of Bars and Merchant Steel. The attitude of the buyers, however, is one of indifference when the present range of prices is being talked, because they are doing considerably better on the material which is now being delivered.

It is yet too early to judge how the spring trade in the lighter lines will develop. The deliveries of Wire, Sheets and Tin Plate are on an enormous scale, but new orders are not coming in to any extent as yet.

In the Plate trade the majority of the mills are delivering promptly and Eastern mills are taking considerable business in the Western territory.

The week has brought out only a moderate business in Structural Material, and some of the mills are able to make shipments in a much more satisfactory manner than in the past.

A few good orders for Steel Rails have been placed and there is one very large contract pending. This year is proving a very satisfactory one for Girder Rails, for which the demand has been very light for some years. The Lorain works of the Steel Corporation goes on Girder Rails and will be running on these for the balance of the year.

Reports from all the distributing centers show the Pig Iron trade to be very dull. The Steel Corporation has purchased from 8000 to 10,000 tons of Valley Bessemer. It is understood that the Pig Iron stock of the corporation is down to the very low figure of 133,000 tons of all kinds, or only a few days' supply.

Southern furnace interests have now taken little new business for a long time and yet are holding fairly firm. On the other hand, buyers are indifferent and it is not quite clear what concessions would tempt them.

There is little that is new in the Cast Iron Pipe business. Fair contracts are being taken. The largest order on the market is for 10,000 tons for New Orleans.

A Comparison of Prices.

Advances Over the Previous Month in Heavy Type,
Declines in Italics.

At date, one week, one month and one year previous.

Mar. 8, 1906. Mar. 1, 1906. Feb. 8, 1906. Mar. 8, 1905.

PIG IRON:

Foundry No. 2 Standard, Philadelphia	\$18.50	\$18.50	\$18.50	\$17.50
Foundry No. 2 Southern, Cincinnati	17.00	16.75	16.75	16.25
Foundry No. 2, Local, Chicago	19.00	19.00	19.00	17.50
Bessemer, Pittsburgh	18.35	18.10	18.35	16.35
Gray Forge, Pittsburgh	16.85	16.85	17.35	16.00
Lake Superior Charcoal, Chicago	19.75	20.00	20.50	18.50

BILLETS, RAILS, &c.:

Bessemer Billets, Pittsburgh	26.50	27.00	26.00	24.00
Forging Billets, Pittsburgh	32.00	32.00	32.00	26.00
Open Hearth Billets, Phila.	29.00	29.00	29.00	29.00
Wire Rods, Pittsburgh	35.00	34.00	35.00	31.50
Steel Rails, Heavy, Eastern Mill	28.00	28.00	28.00	28.00

OLD MATERIAL:

O. Steel Rails, Chicago	15.00	15.00	16.00	14.50
O. Steel Rails, Philadelphia	16.25	16.50	17.25	18.00
O. Iron Rails, Chicago	21.50	21.50	22.50	19.50
O. Iron Rails, Philadelphia	20.50	22.50	23.00	23.00
O. Car Wheels, Chicago	19.00	19.00	19.00	15.75
O. Car Wheels, Philadelphia	18.00	18.75	18.75	16.00
Heavy Steel Scrap, Pittsburgh	14.75	14.75	16.50	16.00
Heavy Steel Scrap, Chicago	13.00	13.00	14.50	14.50

FINISHED IRON AND STEEL:

Refined Iron Bars, Philadelphia	1.73½	1.73½	1.83½	1.67½
Common Iron Bars, Chicago	1.75	1.75	1.75	1.60
Common Iron Bars, Pittsburgh	1.80	1.85	1.85	1.65
Steel Bars, Tidewater, New York	1.64½	1.64½	1.64½	1.64½
Steel Bars, Pittsburgh	1.50	1.50	1.50	1.50
Tank Plates, Tidewater, New York	1.74½	1.74½	1.74½	1.74½
Tank Plates, Pittsburgh	1.60	1.60	1.60	1.60
Beams, Tidewater, New York	1.84½	1.84½	1.84½	1.74½
Beams, Pittsburgh	1.70	1.70	1.70	1.60
Angles, Tidewater, New York	1.84½	1.84½	1.84½	1.74½
Angles, Pittsburgh	1.70	1.70	1.70	1.60
Skelp, Grooved Steel, Pittsburgh	1.57½	1.57½	1.57½	1.65
Skelp, Sheared Steel, Pittsburgh	1.60	1.60	1.60	1.70

SHEETS, NAILS AND WIRE:

Sheets, No. 27, Pittsburgh	2.30	2.30	2.30	2.20
Wire Nails, Pittsburgh	1.85	1.85	1.85	1.80
Cut Nails, Pittsburgh	1.80	1.80	1.80	1.80
Barb Wire, Galv., Pittsburgh	2.30	2.30	2.30	2.25

METALS:

Copper, New York	18.37½	18.12½	17.87½	15.25
Spelter, St. Louis	6.05	5.90	5.95	6.15
Lead, New York	5.35	5.35	5.75	4.45
Lead, St. Louis	5.27½	5.27½	5.52½	4.35
Tin, New York	35.80	36.25	36.20	28.50
Antimony, Hallett, New York	15.25	15.25	14.25	7.87½
Nickel, New York	40.00	40.00	40.00	38.00
Tin Plate, Domestic, Bessemer, 100 pounds, New York	3.69	3.69	3.69	3.74

Chicago.

FISHER BUILDING, March 7, 1906.—(By Telegraph.)

The continued dearth of new business, not only in finished lines but Pig Iron as well, is occasioning some anxiety as to the future among manufacturers, as the heavy tonnage on the order books is rapidly being reduced by the heavy shipments that are going forward on account of the tremendous production. Large consumers of Steel Bars that have already been approached with a view of placing contracts for delivery after July 1 are unanimously of the opinion that ruling quotations are too high, as most of the material now being shipped was purchased last summer on the basis of 1.30c. to 1.40c., Pittsburgh. The demand for Iron Bars is likewise light and the decline of Scrap leads consumers to believe that still lower prices will prevail in the near future. Western mills are practically booked on Structural Shapes through the year, although several Eastern mills are in position to make better deliveries, one large producer promising shipments in three months on assorted sizes at base prices, while another will make deliveries in two months at an advance of \$2 a ton above the Chicago delivered quotation. Eastern mills are also making prompt deliveries on Sheared Plates and their condition was reflected at the meeting of the Plate Association last week, when they favored the reaffirmation of prevailing quotations, notwithstanding the fact that at previous meetings they held out for advances ranging from \$2 to \$4 a ton. Consumption nevertheless continues enormous and daily specifications for Bars, Structural Shapes, Rails and Wire products greatly exceed shipments. The Illinois Steel Company continues to receive shipments of Steel from Eastern mills and consumers of Axle and Forging Billets have been compelled to turn to the same sources to secure an adequate supply, as the local mills can-

not meet their requirements. The Frisco system placed an additional tonnage of Rails with the Carnegie Steel Company last week, making its total purchases in the past ten days 20,000 tons. Contracts for Cast Iron Pipe total 3000 tons and the city of New Orleans is in the market for 10,000 tons. No large contracts for Structural Steel are now under negotiation and plans for the 14 bridges to be built by the city of Chicago have not yet been prepared, although the appropriation has been made.

Pig Iron.—Off grades of Southern No. 2 Foundry have sold in this market during the week on the basis of \$13.50, Birmingham, although established brands are held at a minimum of \$14 and two large producers are still nominally quoting \$14.50, but are closing no business at this price. The demand is extremely light and consumers are holding back awaiting developments. Stocks at Southern furnaces, on the other hand, are reported very light, large accumulations no doubt having been moved to avoid the advance in freight rates. Northern Iron is firm at \$19, Chicago, and while sales are light this price is well maintained, as the furnaces without exception have their output sold through the month of May. The liability of the freight advance on delayed shipments from Southern furnaces is already under discussion between producers and consumers and from present indications will largely be borne by the furnaces. Prevailing quotations on Pig Iron, f.o.b. Chicago, are as follows:

Lake Superior Charcoal.....	\$19.75 to \$20.00
Northern Coke Foundry, No. 1.....	19.50 to 19.75
Northern Coke Foundry, No. 2.....	19.00 to 19.25
Northern Coke Foundry, No. 3.....	18.50 to 18.75
Northern Scotch, No. 1.....	20.00 to 20.25
Ohio Strong Softeners, No. 1.....	20.05 to 20.30
Ohio Strong Softeners, No. 2.....	19.55 to 19.80
Southern Coke, No. 1.....	18.40
Southern Coke, No. 2.....	17.90
Southern Coke, No. 3.....	17.40
Southern Coke, No. 4.....	16.90
Southern Coke, No. 1 Soft.....	18.40
Southern Coke, No. 2 Soft.....	17.90
Southern Gray Forge and Mottled.....	16.40
Malleable Bessemer.....	19.00 to 19.25
Standard Bessemer.....	19.55
Jackson Co. and Kentucky Silvery, 6 %.....	21.30
Jackson Co. and Kentucky Silvery, 8 %.....	23.80
Jackson Co. and Kentucky Silvery, 10 %.....	25.30

Metals.—A moderate demand has prevailed for Metals during the week, and with the exception of Pig Tin, which has declined $\frac{1}{4}$ ¢, prices have been well maintained. We quote: Casting Copper, 18¢, to 18 $\frac{1}{2}$ ¢; Lake, 18 $\frac{1}{2}$ ¢ to 19¢; Pig Tin, car lots, 37 $\frac{1}{2}$ ¢ to 38¢; small lots, 38 $\frac{1}{2}$ ¢ to 39 $\frac{1}{2}$ ¢; Spelter, prompt delivery, 6 $\frac{1}{2}$ ¢ to 6 $\frac{3}{4}$ ¢ for car lots; Lead, Desilverized, 5.50¢ to 5.75¢ for 50-ton lots; Corroding, 6¢ to 6.25¢ for 50-ton lots; on car lots, 2 $\frac{1}{4}$ ¢ per 100 lbs. higher; Sheet Zinc is \$7.50 list, f.o.b. Laselle in car lots of 600-lb. casks. On Old Metals we quote: Copper Wire, 15 $\frac{1}{2}$ ¢; Heavy Copper, 15 $\frac{1}{4}$ ¢; Copper Bottoms, 14 $\frac{1}{2}$ ¢; Copper Clips, 15 $\frac{1}{4}$ ¢; Red Brass, 14 $\frac{1}{2}$ ¢; Red Brass Borings, 12 $\frac{1}{2}$ ¢; Yellow Brass, Heavy, 11 $\frac{1}{2}$ ¢; Yellow Brass Borings, 9 $\frac{1}{2}$ ¢; Light Brass, 8 $\frac{1}{2}$ ¢; Lead Pipe, 4 $\frac{1}{2}$ ¢; Tea Lead, 4 $\frac{1}{2}$ ¢; Zinc, 4 $\frac{1}{2}$ ¢; Pewter, No. 1, 24¢; Tin Foil, 29¢; Block Tin Pipe, 27 $\frac{1}{2}$ ¢.

(By Mail.)

Billets and Rods.—The shortage of both Basic and Bessemer Rods is pronounced and the American Steel & Wire Company continues out of the market, not having a sufficient supply to meet the demands of its own finishing departments. Eastern mills are shipping both Axle and Forging Billets into this market on the basis of \$32 to \$33 delivered in large lots. The Illinois Steel Company is unable to meet the demands of the consumers which it usually supplies and the shortage is made up by Eastern mills.

Rails and Track Supplies.—The Frisco system has placed an additional tonnage of Rails and its total purchase made within the past ten days amounts to about 20,000 tons. All of this business was taken by the Carnegie Steel Company, as the local mill has its entire output taken up through the remainder of the year. The demand for Track Supplies has fallen off materially, but specifications on existing contracts are in excess of shipments and the mills all have tonnage on their books that will insure operations well through the first half of the year. We make the following quotations: Angle Bars, accompanying Rail orders, 1906 delivery, 1.50¢; carload lots, 1.75¢; Spikes, 2.10¢; Track Bolts, 2.65¢ to 2.75¢, base, Square Nuts. The store prices on Track Supplies range from 15¢ to 20¢ above mill prices. Light Rails, 30 to 45 lb. sections, \$27 to \$28; 25-lb., \$28 to \$29; 20-lb., \$29 to \$30; 16-lb., \$30 to \$31; 12-lb., \$31 to \$32, and lighter sections down to 8-lb., \$38 to \$40, f.o.b. mill. Standard Sections are unchanged at \$28, f.o.b. mill, full freight to destination.

Plates.—Eastern mills are now making deliveries on Sheared Plates in from a week to ten days. The local mill is enjoying good specifications, but is still in position to take on additional tonnage and to make deliveries in from three to four weeks. Quotations are firmly maintained, as follows: Tank quality, $\frac{1}{4}$ -inch and heavier, wider than 6 $\frac{1}{4}$ and up to 100 inches wide, inclusive, car lots, Chicago, 1.76 $\frac{1}{2}$ ¢; 3-16-inch, 1.86 $\frac{1}{2}$ ¢; Nos. 7 and 8 gauge, 1.91 $\frac{1}{2}$ ¢; No. 9,

2.01 $\frac{1}{2}$ ¢; Flange quality, in widths up to 100 inches, 1.86 $\frac{1}{2}$ ¢, base, for $\frac{1}{4}$ -inch and heavier, with the same advances for lighter weights; Sketch Plates, Tank quality, 1.86 $\frac{1}{2}$ ¢; Flange quality, 1.96 $\frac{1}{2}$ ¢. Store prices on Plates are as follows: Tank Plate, $\frac{1}{4}$ -inch and heavier, up to 72 inches wide, 2¢ to 2.10¢; from 72 to 96 inches wide, 2.10¢ to 2.20¢; 3-16-inch up to 60 inches wide, 2.10¢ to 2.20¢; 72 inches wide, 2.35¢ to 2.45¢; No. 8, up to 60 inches wide, 2.15¢ to 2.25¢; Flange and Head quality, 25¢ extra.

Structural Material.—The contract for the County Building awarded last week is the last of the large Steel orders that has been under consideration in this market. Specifications for the new bridges to be erected for the city of Chicago have not yet been issued and the erection of the Field Museum this year is problematical on account of the settling of that estate. The tonnage on the books of Eastern mills insures their operations well through the year, and one large Eastern mill, in position to make deliveries in from two to three months, is seeking business at an advance of \$2 a ton above the Chicago delivered price. Another Eastern mill is taking business on the regular basis and is promising deliveries in from three to four months. Mill quotations are as follows: Beams and Channels, 3 to 15 inches, inclusive, 1.86 $\frac{1}{2}$ ¢; Angles, 3 to 6 inches, $\frac{1}{4}$ inch and heavier, 1.86 $\frac{1}{2}$ ¢; Angles, larger than 6 inches on one or both legs, 1.96 $\frac{1}{2}$ ¢; Beams, larger than 15 inches, 1.96 $\frac{1}{2}$ ¢; Zees, 3 inches and over, 1.86 $\frac{1}{2}$ ¢; Tees, 3 inches and over, 1.91 $\frac{1}{2}$ ¢, in addition to the usual extras for cutting to extra lengths, punching, coping, bending or other shop work.

Sheets.—There is little change in market conditions and the new tonnage that is being received by the mills is comparatively light. Specifications, on the other hand, are extremely heavy, and notwithstanding the operation of practically all of the mills deliveries are insufficient to meet the demands of consumers. Quotations are well maintained and are unchanged, as follows: Blue Annealed, Nos. 9 and 10, 1.86 $\frac{1}{2}$ ¢ to 1.91 $\frac{1}{2}$ ¢; Nos. 16 and 17, 2.06 $\frac{1}{2}$ ¢ to 2.11 $\frac{1}{2}$ ¢; Box Annealed, Nos. 18 to 20, 2.26 $\frac{1}{2}$ ¢ to 2.31 $\frac{1}{2}$ ¢; No. 27, 2.46 $\frac{1}{2}$ ¢ to 2.51 $\frac{1}{2}$ ¢; No. 28, 2.56 $\frac{1}{2}$ ¢ to 2.61 $\frac{1}{2}$ ¢; Galvanized Sheets, Nos. 10 to 14, 2.61 $\frac{1}{2}$ ¢; Nos. 17 to 21, 2.86 $\frac{1}{2}$ ¢; Nos. 22 to 24, 3.01 $\frac{1}{2}$ ¢; Nos. 25 and 26, 3.21 $\frac{1}{2}$ ¢; No. 27, 3.41 $\frac{1}{2}$ ¢; No. 28, 3.61 $\frac{1}{2}$ ¢; No. 30, 4.11 $\frac{1}{2}$ ¢. Sheets from store: Blue Annealed, Nos. 10 and 11, 2.10¢ to 2.20¢; Nos. 12 and 13, 2.15¢ to 2.25¢; Nos. 14 and 15, 2.20¢ to 2.30¢; No. 16, 2.30¢ to 2.40¢; Box Annealed, Nos. 18 to 20, 2.50¢ to 2.60¢; Nos. 22 to 24, 2.60¢ to 2.70¢; No. 26, 2.65¢ to 2.75¢; No. 27, 2.70¢ to 2.80¢; No. 28, 2.80¢ to 2.90¢; No. 30, 3.25¢ to 3.35¢. Galvanized from store: Nos. 10 to 20, 3¢ to 3.10¢; Nos. 22 to 24, 3.15¢ to 3.25¢; No. 26, 3.35¢ to 3.45¢; No. 27, 3.55¢ to 3.65¢; No. 28, 3.75¢ to 3.85¢; No. 30, 4.85¢ to 5.05¢.

Bars.—Large Western consumers who have been approached with a view of closing contracts for their year's requirements dating from July 1 are of the opinion that present prices are somewhat too high and will not close unless some concessions are granted. The amount of new Steel Bar business that is offered is exceedingly light, and is limited almost entirely to those sizes on which the mills are unable to make early deliveries. The demand for Iron Bars is also light, and while the Republic Iron & Steel Company has established a minimum of 1.75¢, other makers are selling on the basis of 1.70¢. Quotations are as follows: Iron Bars, 1.75¢; Steel Bars, 1.66 $\frac{1}{2}$ ¢, both half extras; Hoops, 2.06 $\frac{1}{2}$ ¢, extras as per Hoop card; Bands, 1.66 $\frac{1}{2}$ ¢, as per Steel card; Soft Steel Angles and Shapes, 1.66 $\frac{1}{2}$ ¢, half extras. Store prices are as follows: Bar Iron, 2.20¢ to 2.25¢; Steel Bars, 1.85¢ and as high as 2¢ is asked on certain scarce sizes; Steel Bands, 1.85¢ to 1.90¢, half extras; Soft Steel Hoops, 2.30¢ to 2.40¢, full extras.

Merchant Pipe.—Large Western consumers and distributors are already figuring on material to be shipped in here with the opening of navigation. No large contracts have as yet been placed, however, and the demand is limited almost entirely to small lots for immediate consumption. The market continues firm on the basis of 81 off the list, Pittsburgh, although official discounts on car lots are unchanged, as follows: Black Steel Pipe, 78.35 per cent. on the base sizes $\frac{3}{4}$ to 6 inches, and Galvanized, 68.35 per cent. Iron Pipe is quoted from one and one-half to two points higher. From store in small lots Chicago jobbers are quoting 76 $\frac{1}{2}$ to 77 per cent. on Black Steel Pipe, $\frac{3}{4}$ to 6 inches.

Boiler Tubes.—The large contracts recently placed with boiler makers by the United States Steel Corporation have resulted in heavy specifications for Steel Tubes. The local demand for Iron Tubes is limited. Official discounts, base sizes, in car lots, are as follows: Steel Tubes, 62.35; Iron, 51.35; Seamless, 50.35; 2 $\frac{1}{2}$ -inch and smaller and lengths over 18 feet, and 2 $\frac{1}{2}$ -inch and lengths over 22 feet, 10 per cent. extra. Store prices are unchanged, as follows:

	Steel.	Iron.	Seamless.
1 to 1 $\frac{1}{2}$ inches.....	40	35	42 $\frac{1}{2}$
1 $\frac{1}{2}$ to 2 $\frac{1}{4}$ inches.....	50	35	35
2 $\frac{1}{4}$ inches.....	52 $\frac{1}{2}$	35	30
2 $\frac{1}{2}$ to 5 inches.....	60	47 $\frac{1}{2}$	42 $\frac{1}{2}$
6 inches and larger.....	50	35	..

Merchant Steel.—At the meeting of the Shafting manufacturers held in Pittsburgh last week a better understanding was reached with regard to the maintenance of prices, and all concessions that have been offered during the past three months, amounting to three points in extreme cases, have been withdrawn. The price reaffirmed on deliveries in base territory is 50 per cent. off the list on car lots and 45 per cent. in less than car lots. While specifications on Implement Steel are extremely heavy, the tonnage on the books of the manufacturers is rapidly being reduced and is not being replenished by new business. Implement manufacturers feel that a reduction in price should be made on contracts dating from July 1, and until something along this line is done it is not probable that any large contracts will be closed for next year's requirements. Quotations are as follows: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up to $1\frac{1}{2}$ x $\frac{1}{2}$ inch, 1.65c., and Iron Finish, $1\frac{1}{2}$ x $\frac{1}{2}$ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: $\frac{3}{4}$, $\frac{1}{2}$ and 1 inch, 2c., and $1\frac{1}{4}$ inch and larger, 1.90c., Pittsburgh; Smooth Finished Machinery Steel, 1.91 $\frac{1}{2}$ c.; Flat Sleigh Shoe, 1.71 $\frac{1}{2}$ c.; Concave and Convex Sleigh Shoe, 1.86 $\frac{1}{2}$ c.; Cutter Shoe, 2.40c.; Toe Calk Steel, 2.21 $\frac{1}{2}$ c.; Railway Spring, 1.86 $\frac{1}{2}$ c.; Crucible Tool Steel, 6 $\frac{1}{2}$ c. to 8c.; special grades of Tool Steel, 13c. and up; Shafting, 50 per cent. discount on car lots and 45 per cent. in less than car lots, in base territory.

Cast Iron Pipe.—The United States Cast Iron Pipe & Foundry Company was last week awarded the contract for 2100 tons of Pipe by the Public Safety Department of the city of Cleveland, as well as 800 tons for the city of Milwaukee. New Orleans is in the market for 100 miles of Pipe, amounting to 10,000 tons, and this will be closed about April 1. The Eastern Wisconsin Railway & Light Company is also in the market for 12 miles of Gas Pipe, amounting to about 1000 tons. All of the Pipe works have large contracts on their books for forward delivery and the statement can be made without reservation that the tonnage already booked for this year is greater than ever before at this season. Quotations are unchanged, notwithstanding the weakening of the Iron market, as follows: Water Pipe, 4-inch, \$31; 6, 8, 10 and 12 inch, \$30; over 12-inch, \$29, with \$1 extra for Gas Pipe. Large municipal contracts are usually placed at somewhat lower basis.

Coke.—Western foundries are not generally contracting for coke and are largely depending upon consignments for their immediate wants. High grade Connellsville Foundry Coke continues to be offered on the basis of \$5.40 to \$5.65, Chicago, although high sulphur grades can be had at a concession of \$1 a ton. On contracts running through the remainder of the first half by-product Coke is quoted at \$5.80, Chicago.

Old Material.—All grades continue weak, and the general tendency of the market is toward a still lower basis. The heavy stocks in the hands of dealers, notwithstanding the fact that a large tonnage was purchased on a basis higher than that now prevailing, are being offered at concessions. The mills, on the other hand, are not buying heavily, and from present indications will hold off until the bottom has been reached. Railroad lists are light and of little consequence, inasmuch as the bulk of their material, which is usually offered during the spring months, has already been moved. The railroad offerings during the spring months will consequently be greatly curtailed, although it is believed that in the aggregate this tonnage will be offset by the stocks now in the hands of dealers. The range of prices paid by large consumers to producers and dealers, car lots, f.o.b. Chicago, is as follows:

Old Iron Rails.....	\$21.50 to \$22.00
Old Steel Rails, 4 feet and over.....	16.00 to 16.50
Old Steel Rails, less than 4 feet.....	15.00 to 15.50
Heavy Relaying Rails, subject to inspection.....	27.00 to 27.50
Old Car Wheels.....	19.00 to 19.50
Heavy Melting Steel Scrap.....	13.00 to 13.50
Frogs, Switches and Guards.....	14.00 to 14.50
Mixed Steel.....	12.50 to 13.00

The following quotations are per net ton:

Iron Fish Plates.....	\$17.00 to \$17.50
Iron Car Axles.....	23.50 to 24.00
Steel Car Axles.....	19.50 to 20.00
No. 1 Railroad Wrought.....	15.00 to 15.50
No. 2 Railroad Wrought.....	14.00 to 14.50
Locomotive Tires, smooth.....	14.00 to 14.50
Railway Springs.....	13.50 to 14.00
No. 1 Dealers' Forge.....	12.00 to 12.50
Wrought Pipes and Flues.....	11.25 to 11.50
Mixed Bushing.....	11.25 to 11.50
Iron Axle Turnings.....	12.00 to 12.50
Soft Steel Axle Turnings.....	11.50 to 12.00
Machine Shop Turnings.....	11.50 to 12.00
Cast Borings.....	9.50 to 10.00
Mixed Borings, &c.....	9.00 to 9.50
No. 1 Mill.....	9.00 to 9.50
No. 2 Mill.....	7.50 to 8.00
No. 1 Boilers, cut to Sheets and Rings.....	11.00 to 11.50
No. 1 Cast Scrap.....	13.50 to 14.00
Stove Plate and Light Cast Scrap.....	11.00 to 11.50
Railroad Malleable.....	13.50 to 14.00
Agricultural Malleable.....	13.00 to 13.50

Philadelphia.

REAL ESTATE TRUST BUILDING, March 6, 1906.

The Iron and Steel markets continue just about as was reported last week. There is certainly no reason for saying that prices are weak, yet if sellers should attempt to put out heavy tonnages it could only be done by making concessions. On the other hand, it would not take a great deal of new buying to give the market a stronger tone, so that it would be difficult to make any forecast in regard to what conditions may be 30 or 60 days hence. Regarded from an inside point of view, the immediate outlook is very good, but both producers and consumers are in a position to decline or to postpone any business that is not entirely in accord with their views. Opinions are somewhat indefinite, however, and as a natural consequence things are allowed to drift along without any aggressive movement from either side. There is a pretty general belief that plenty of Iron will be available to meet current requirements, so that buyers rest quite easy; and as every ton of Iron that furnaces can turn out is quickly taken for consumption sellers are equally complacent. Something must occur in the near future to change these happy conditions, but how it will come, what it will be and when it will be time alone can determine. Unsettling influences can be found if they are looked for, but as they are purely problematical they attract very little attention. The Coal strike is one of these influences, the financial condition is another, and still another will be the crop report, which is to be issued on Saturday, March 10. These may develop unfavorably, but it is surprising how little attention is given to them, from which it may be inferred that manufacturers are strongly entrenched and are therefore not afraid of any sudden or unfavorable developments. As already stated, there must be a change soon, but the chances are so evenly balanced and will depend so much on what may occur during the next few weeks that it is quite impossible to make anything like confident predictions in regard to which way the turn will be.

Pig Iron.—Dullness is one of the chief features of the market at the present time. Urgency for deliveries is also a prominent feature, although this is hardly as noticeable as it was during the two or three preceding months. Stocks are very light, however, and March and April shipments command very full prices. Some well posted authorities claim that shipments have been anticipated to such an extent that additional purchases will be necessary to complete the second quarter's requirements, and if such should be the case it will strengthen the situation materially. It has been assumed that there was a possibility that consumers had overbought, but as the season advances it looks as though they would require more than they expected rather than less. This, if true, would soon change the character of the market, but it is too soon yet to form any decided opinion on that point, although it is one of the possibilities and as such should not be ignored. Anything that would restrict production would be a very serious matter at this time; hence the anxiety in regard to the labor question, especially as it affects the Coal trade. It is supposed that the matter will be brought to some kind of a conclusion before the end of the month, but in view of the possibility of complications it is not to be expected that there will be any immediate resumption of heavy buying. The probability is rather that new operations will be confined to filling in bare spots during the second quarter, leaving the more distant future to take care of itself. For the present furnaces have all they can do to meet the call for prompt deliveries, although mill Irons and low foundry grades are said to be more plentiful than of late. Basic is scarce and could be placed at full prices for the second quarter, but there is little or no inquiry for later dates and prices are rather easy. Low Phosphorus is scarce and commands \$26 to \$26.50, delivered, for spot lots. May and June could be done at about \$1 less, according to quantity, date of shipment, &c. There is no domestic Low Phosphorus available at the moment, the above quotations being for foreign material. General quotations are about as follows for Philadelphia and nearby deliveries, although business is mostly at the inside figures:

No. 1 X Foundry.....	\$19.00 to \$19.25
No. 2 X Foundry.....	18.50 to 18.75
No. 2 Plain.....	17.50 to 18.00
No. 2 Southern.....	18.75 to 19.00
Standard Gray Forge.....	16.50 to 17.00
Basic, nominal at.....	17.90 to 18.00
Low Phosphorus.....	25.50 to 26.50
Bessemer.....	19.75 to 20.25
Malleable Iron.....	19.00 to 19.25

Steel Alloys.—There has not been much business during the past week. Arrivals are somewhat larger, and offers for shipment during the second and third quarter are more liberal, so that consumers are trying to do the best they can with what they have until the outlook clears. Prices are purely nominal at about the figures named below, the inside figure being for late deliveries:

Silico Spiegel, 10 and 18 per cent.....	\$43.00 to \$50.00
Ferrosilicon, 50 per cent.....	90.00 to 92.00
Spiegeleisen, 20 per cent.....	38.00 to 45.00
Ferromanganese, 80 per cent.....	95.00 to 140.00

Muck Bars.—Nothing is doing. Prices are nominal at \$28 to \$29, f.o.b. sellers' mills.

Steel.—The market is strong, and material for prompt shipment is rather scarce. Prices for ordinary Open Hearth Steel are firm at \$29, as a minimum for the most desirable business, and from that to \$30 for smaller lots. Forging Billets are \$35 to \$38.

Plates.—Business in this line is very good. New work comes up in good volume, while specifications on old contracts are unusually prompt. Prospects for the spring and summer trade are excellent, and it looks as though the full capacity would be taxed to keep up with demand. Prices are unchanged as last quoted—viz.:

	Carload. Cents.	Part carload. Cents.
Tank, Bridge and Boat Steel.....	1.73½	1.78½
Flange or Boiler Steel.....	1.83½	1.88½
Marine, A. B. M. A. and Commercial		
Fire Box Steel.....	1.93½	1.98½
Marine.....	2.13½	2.18½
Locomotive Fire Box Steel.....	2.23½	2.28½
The above are base prices for ¼-inch and heavier. ing extras apply:		
3-16-inch thick.....	\$0.10	
Nos. 7 and 8, B. W. G.....	.15	
No. 9, B. W. G.....	.25	
Plates over 100 to 110 inches.....	.05	
Plates over 110 to 115 inches.....	.10	
Plates over 115 to 120 inches.....	.15	
Plates over 120 to 125 inches.....	.25	
Plates over 125 to 130 inches.....	.50	
Plates over 130 inches.....	1.00	

Structural Material.—The demand is good, although the increased capacity due to the starting up of new mills relieves the pressure for quick deliveries, so that conditions appear to be more nearly normal than they have been for a long time past. There is a vast amount of work to be done, however, and there is little doubt that the mills will have all they can do for months to come. Prices unchanged, as follows: Beams, Channels and Angles, 1.83½c. to 2c., delivered.

Bars.—The demand is rather light, but specifications are fairly satisfactory, so that most of the mills are well employed. There is rather sharp competition for desirable business, but 1.73½c. seems to be an inside figure, some quoting a half tenth to a tenth more than that for first-class Refined Iron. Steel Bars are steady at 1.63½c. to 1.73½c., according to delivery. Small Angles are 2.1c. to 2.25c.

Sheets.—There is quite a good demand for Sheets, orders having been for liberal tonnages, besides a somewhat unusual run for small and medium sized lots. Prices unchanged, as follows: Nos. 18 to 20, 2.40c.; Nos. 22 to 24, 2.50c.; Nos. 25 and 26, 2.60c.; No. 27, 2.70c., and No. 28, 2.80c.

Old Material.—The market is unsettled and as a rule is somewhat below last week's figures. Buyers discriminate more closely on what they are getting and only choice stock commands full quoted rates. Choice No. 1 Steel brings about \$16.50, but miscellaneous yard stock has been picked up at less than \$16, and only about \$15.50 is bid for stock of that kind. There is no great pressure to sell, however, and if buying becomes any way active prices would probably respond very easily. Meanwhile bids and offers for deliveries in buyers' yards are about as follows:

Scrap Steel Rails and Crops.....	\$16.25 to \$16.50
No. 1 Steel Scrap (yard).....	15.50 to 16.00
Low Phosphorus Scrap.....	22.00 to 23.00
Old Steel Axles.....	19.00 to 20.00
Old Iron Axles.....	24.00 to 25.00
Old Iron Rails.....	20.50 to 21.50
Old Car Wheels.....	18.00 to 18.75
Choice Scrap, R. R. No. 1 Wrought....	19.00 to 19.50
No. 1 Yard Scrap.....	17.00 to 18.00
Long and Short.....	15.50 to 16.00
Machinery Scrap.....	15.50 to 16.00
Wrought Iron Pipe.....	14.00 to 15.00
No. 1 Forge Fire Scrap.....	15.50 to 16.00
No. 2 Light Ordinary.....	10.00 to 11.00
Wrought Turnings.....	13.50 to 13.75
Axle Turnings, Choice Heavy.....	14.00 to 14.50
Cast Borings.....	9.50 to 10.00
Stove Plates.....	12.00 to 12.50
Grate Bars.....	11.50 to 12.00

Traffic earnings of the 213,828 miles of railroads operated in the United States during 1904 amounted in that year to \$1,978,000,000 gross, or \$9250 per mile, as compared with \$9302 in 1903 and \$8618 in 1902. Operating expenses in 1904 were \$1,338,000,000, or \$6259 per mile of road, as against \$6414 in 1903 and \$5813 in 1902. The ratio of operating expenses to earnings was 67.7 per cent. in 1904, against 69 per cent. in 1903 and 67.5 in 1902. The total available revenue in 1904 amounted to \$721,000,000, or \$3370 per mile, as against \$3323 in 1903 and \$3194 in 1902. The returns on stock averaged 3.31 per cent. in 1904, against 3.03 in 1903, and on bonds 4 per cent., against 4.17 in 1903. The total capital stock and bonded and other indebtedness amounted in 1904 to \$14,095,000,000, or \$65,920 per mile of line.

Pittsburgh.

PARK BUILDING, March 7, 1906.—(By Telegraph.)

Pig Iron.—The purchase by the Steel Corporation from the Bessemer Pig Iron Association of 7000 to 10,000 tons of Bessemer Iron for March shipment at \$17.25, Valley furnace, is the only important event of an otherwise quiet week in the Pig Iron trade. However, there is possibly a little more inquiry and it is believed there will be more buying than in February. Consumers are specifying freely on contracts, and in some cases are anticipating shipments; for this reason it is believed that there will be soon a more active buying movement. The usual quotation on Bessemer Iron is \$17.50 at Valley furnace for fair sized lots, but on large tonnage, such as the Steel Corporation buys, \$17.25 at furnace is quoted. We note a sale of 3000 tons for second quarter delivery at \$17.50, Valley furnace. Basic Iron is held by the furnaces at \$17 at furnace, but this price would probably be slightly shaded by some of the dealers. There is more inquiry for Foundry Iron, Northern brands of No. 2 being held at about \$17.25, Valley furnace, but on a firm offer some sellers would likely accept \$17. There is very little inquiry for Forge Iron and we quote Northern brands at \$16, Valley furnace, or \$16.85, Pittsburgh.

Steel.—The mills seem to be making slightly better deliveries on Billets, but there is still a scarcity of Sheet and Tin Bars for prompt delivery. Bessemer Billets are held at about \$26.50 to \$27, and Open Hearth Billets \$27 to \$28, Pittsburgh. Some of the dealers who have small lots of Steel are offering it at slightly less than the above prices. Sheet and Tin Bars in random lengths are \$27, delivered, in the Pittsburgh district, with an advance of 50c. a ton for Cut Bars.

(By Mail.)

Reliable and confidential advices are that strong efforts will be made by the leading Coal interests to make a settlement with the miners, and the chances at this writing are against a strike. The Executive Board of the National Miners' Union is to meet in Indianapolis on March 13, and very shortly after that date another conference will be held with the Coal operators, at which it is probable a wage scale for the coming year will be arranged. As noted last week new tonnage in nearly all lines of Finished Iron and Steel has shown a marked falling off, but the mills are just as busy as ever on contracts, on which buyers are specifying freely and taking in material as fast as the mills can ship it. The demand for Structural Steel and Rails continues heavy. In Pig Iron circles the event of the week has been the purchase by the Steel Corporation of the remaining Iron held by furnaces in the Bessemer Pig Iron Association for March delivery. The purchase will range from 7000 to 10,000 tons, and the price was not above \$17.25, at Valley furnace. The Steel Corporation agreed early last month to take all the available Iron the association had for shipment prior to April 1, and in buying this additional tonnage is exercising a practical option it had on the Iron. There is some inquiry for Bessemer Iron from Eastern consumers, one of them wanting about 2000 tons for March and April delivery. Sellers generally quote \$17.50, at furnace, for Bessemer for medium sized lots. Furnaces continue to quote \$17, at furnace, for Basic, but this might be slightly shaded by some of the dealers who have a moderate tonnage and are offering it on the market. There is a little better inquiry for Foundry Iron, Northern brands being held at about \$17.25, Valley furnace, but some sellers would likely accept \$17 for large tonnage and extended delivery. There is little inquiry for Forge Iron, which we quote at \$16, at furnace, or \$16.85, Pittsburgh. On a firm offer this might be slightly shaded. There is not much inquiry for Steel, and the tone of the market seems to be a shade easier in spite of the fact that Steel is scarce and the mills are still behind on deliveries. The Scrap market is firmer, due to more inquiry, and the same is true of Coke.

Ferromanganese.—There has been quite an active demand for prompt shipment in the last few days, and we note a number of small sales of 80 per cent. foreign for spot delivery at \$135 to \$140, Pittsburgh. For April and May delivery from \$100 to \$110 is quoted, and we are advised there has been some buying at these prices. It is stated that the leading local producer of Ferro will not be a seller in the market this year, but will need its entire output, which at the present time is heavy.

Muck Bar.—There is absolutely no demand and prices are decidedly easier. In the entire absence of sales we quote local grades of Muck Bar made from all Pig Iron at nominally \$30, Pittsburgh.

Steel Rails.—The mills are now practically sold up on Rails to October, but a good deal of tonnage is still being placed. The Pennsylvania Railroad has placed about 20,000

tons additional and a Western road about 15,000 tons. Many new trolley lines are being built and a heavy demand for Standard Section Rails for electric roads is likely to last for some time yet. We note an active demand for Light Rails, prices on which are firm and as follows: 8-lb., \$36; 10-lb., \$32; 12-lb., \$30; 16-lb., \$29; 20-lb., \$28.50; 25 to 45 lbs., \$27.50 to \$28, maker's mill.

Rods.—We note a continued scarcity of Rods, due to the fact that the two leading interests have not been sellers in the open market for some time. Bessemer and Open Hearth Rods are firm at \$34 and Chain Rods \$35, Pittsburgh.

Skelp.—Specifications on contracts are coming in freely, the mills being full of work, but new tonnage is light. Prices on Iron Skelp have eased off to some extent. We quote: Grooved Steel Skelp, 1.57½c. to 1.60c.; Sheared Steel Skelp, 1.60c. to 1.65c.; Grooved Iron Skelp, 1.65c. to 1.70c.; Sheared Iron Skelp, 1.75c. to 1.80c., Pittsburgh, these prices being for ordinary widths and gauges.

Structural Material.—The fact that the mills rolling Structural Steel have decided to book tonnage for delivery up to the close of this year probably indicates that prices will not be advanced. The volume of business continues enormously heavy and a very large tonnage is in sight. The American Bridge Company has closed several important contracts. The McClintic-Marshall Construction Company, the Pittsburgh Steel Construction Company and other smaller local Structural concerns are crowded with work practically up to the close of the year. Prices continue very firm, and we quote: Beams and Channels, up to 15-inch, 1.70c.; over 15-inch, 1.80c.; Angles, 3 x 2 x ¼ inch thick up to 6 x 6 inches, 1.75c.; 8 x 8 and 7 x 3½ inches, 1.80c.; Zees, 3-inch and larger, 1.70c.; Tees, 3-inch and larger, 1.75c. Under the Steel Bar card Angles, Channels and Tees under 3-inch are 1.60c., base, for Bessemer and Open Hearth, subject to half extras on the Standard Steel Bar card.

Plates.—A moderate amount of new tonnage is being placed, but it is mostly in small lots, the mills running nearly altogether on the heavy contracts they booked last year, on which specifications are coming in at a fairly satisfactory rate. It is not believed there will be any advance in price of Plates for some time, hardly during this year, as the largest interests believe the market is on a conservative basis and that prices are high enough. We quote: Tank Plates, ¼ inch thick, 6¼ up to 100 inches in width, 1.60c., base, at mills, Pittsburgh. Extras over the above prices are as follows:

	Extra per 100 pounds.
Gauges lighter than ¼-inch to and including 3-16-inch Plates on thin edge.....	\$0.10
Gauges Nos. 7 and 8.....	.15
Gauge No. 9.....	.25
Plates over 100 to 110 inches.....	.05
Plates over 110 to 115 inches.....	.10
Plates over 115 to 120 inches.....	.15
Plates over 120 to 125 inches.....	.25
Plates over 125 to 130 inches.....	.50
Plates over 130 inches.....	1.00
All sketches (excepting straight taper Plates varying not more than 4 inches in width at ends, narrowest end being not less than 30 inches)...	.10
Complete Circles.....	.20
Boiler and Flange Steel Plates.....	.20
"A. B. M. A." and ordinary Fire Box Steel Plates	.30
Still Bottom Steel.....	.30
Marine Steel.....	.40
Shell Grade of Steel is abandoned.	

TERMS.—Net cash 30 days. For anticipated payments a maximum discount may be allowed at the rate of 6 per cent. per annum and for a longer time than 30 days interest shall be charged at the same rate per annum. Invoices paid within 10 days from date thereof, discount of ¼ of 1 per cent. is allowable. Pacific Coast base, 1.60c., f.o.b. Pittsburgh, with all rail tariff rate of freight to destination added, no reduction for rectangular shapes 14 inches wide down to 6 inches of Tank, Ship or Bridge quality.

Sheets.—The consumption of Sheets is enormous and shipments by the mills on contracts placed some time ago are very heavy. None of the leading mills are in position to take new contracts for Black or Galvanized Sheets for delivery within 60 to 90 days. New demand is fair, but the mills are running mostly on contracts. There is still trouble in getting prompt deliveries of Sheet Bars, and we understand that the Republic Iron & Steel Company is taking orders for Sheet Bars for delivery in the latter part of second quarter. Prices on Sheets are fairly strong, and we quote: Black Sheets, Box Annealed, one pass through cold rolls, Nos. 10 to 12 gauge, 2c.; Nos. 13 and 14, 2.05c.; Nos. 15 and 16, 2.10c.; Nos. 17 to 21, 2.15c.; Nos. 22 to 24, 2.20c.; Nos. 25 and 26, 2.25c.; No. 27, 2.30c.; No. 28, 2.40c.; No. 29, 2.55c., and No. 30, 2.65c. It is probable that on desirable specifications these prices could be shaded about \$1 a ton. Galvanized Sheets: Nos. 10 and 11, 2.35c.; Nos. 12 to 14, 2.45c.; Nos. 15 and 16, 2.55c.; Nos. 17 to 21, 2.70c.; Nos. 22 to 24, 2.85c.; Nos. 25 and 26, 3.05c.; No. 27, 3.25c.; No. 28, 3.45c.; No. 29, 3.70c., and No. 30, 3.95c. We quote No. 28 Gauge Painted Roofing Sheets at \$1.65 per square and Galvanized Roofing Sheets, No. 28 gauge, at \$3 per square for 2½-inch corrugations. Jobbers charge the usual advances over these prices for small lots.

Iron and Steel Bars.—While new tonnage in both Iron and Steel Bars is lighter than for some time specifications

on the heavy contracts placed some time ago continue to come forward freely, and the mills are somewhat behind in shipments. Prices on Iron Bars are slightly easier, due to the weakness in Muck Bar and Iron Scrap. We quote Refined Iron Bars, made from all Pig Iron, at 1.95c. to 2c., and Common Iron Bars, made from partly Scrap, at 1.80c., Pittsburgh. We quote Steel Bars at 1.50c., base, half extras, for carloads and larger lots.

Hoops and Bands.—Consumers are specifying freely on contracts placed some time ago when prices were lower, but new tonnage is light, as leading buyers are covered ahead. We quote Steel Hoops at 1.85c. and Bands to be used for cooperage purposes at 1.90c., the latter carrying full Hoop and Band extras. Bands for other than cooperage purposes are 1.50c., base, half extras, as per Standard Steel card. Above prices are for carload lots, f.o.b. Pittsburgh, plus full tariff rail rate to point of delivery.

Tin Plate.—Very little new tonnage is being placed, but buyers are specifying freely on contracts placed last fall and in January, when prices were lower than they are now. It is said that some of the leading mills have practically their entire product sold up to July 1 at these low prices, and are making very heavy shipments. The supply of Tin Bars is slightly better, and the American Sheet & Tin Plate Company expects to start this week several of its Tin Plate mills which have been idle because a supply of Tin Bars could not be assured. We quote Tin Plate at \$3.50 per base box, f.o.b. Pittsburgh, for 14 x 20 100-lb. Cokes, terms 30 days, less 2 per cent. off for cash in 10 days, on which price a rebate of 5c. a box is usually allowed for carloads and larger lots.

Merchant Steel.—While new tonnage is light, implement makers and other large consumers are specifying freely on contracts and in some cases are anticipating deliveries. Shipments by the mills are heavy. Prices remain firm and we quote: Planished or Smooth Finished Tire Steel, 1.70c.; Iron Finish up to 1½ x ½ inch, 1.65c., and Iron Finish, 1½ x ½ inch and larger, 1.50c., base, Pittsburgh, and Channels for solid rubber tire are quoted as follows: ¾, ¾ and 1 inch, 2c., and 1½-inch and larger, 1.90c.; Toe Calk Steel, 2c. to 2.05c.; Railway Spring Steel, 1.65c. to 1.70c.; Cutter Shoes, 2.20c. to 2.25c.; Flat Sleigh Shoe, 1.50c. to 1.55c.; Crucible Tool Steel, 6c. to 8c. for ordinary grades and 12c. and upward for special grades. We quote Cold Rolled Shafting at 50 per cent. discount in carloads and 45 per cent. in less than carloads, delivered in base territory.

Railroad Spikes.—The demand continues quite active and the mills are well filled with orders. We quote \$2 to \$2.05, f.o.b. Pittsburgh.

Spelter.—There is practically an entire absence of demand, yet producers do not seem anxious to book tonnage at present prices. We quote best grades of Prime Western at 5.85c., St. Louis, equal to 5.97½c., Pittsburgh. On a firm offer this price might be shaded.

Merchant Pipe.—We note a continued seasonable demand for Pipe and the leading mills are very comfortably filled with orders and are making heavy shipments. The very low prices ruling for Pipe are responsible to some extent for the continued good demand, buyers realizing that there is no risk whatever in placing orders at present prices. The extreme discount on Merchant sizes of Steel Pipe remains at 81 per cent. off. Official discounts, on which an extra point is allowed to the large trade, are as follows:

	Merchant Pipe.			
	Steel.		Iron.	
	Black.	Galv.	Black.	Galv.
½ and ¾ inch.....	.72	.68	.69	.53
¾ inch.....	.74	.69	.71	.57
1 inch.....	.76	.64	.73	.61
¾ to 6 inches.....	.80	.70	.77½	.67½
7 to 12 inches.....	.75	.60	.72½	.57
Extra strong, plain ends:				
¾ to ¾ inch.....	.65	.53	.62	.50
¾ to 4 inches.....	.72	.60	.69	.57
4½ to 8 inches.....	.68	.56	.65	.53
Double extra strong, plain ends:				
¾ to 8 inches.....	.61	.50	.58	.47

Discounts to consumers in small lots are one point higher than above.

Boiler Tubes.—New demand for Tubes is rather light, there being more inquiry for Iron Tubes than for Steel. Specifications on contracts are coming forward freely and shipments by the mills are large. Official discounts, which are well maintained, are as follows:

	Iron.	Steel.
1 to 1½ inches.....	41	46
1½ to 2¼ inches.....	41	58
2¼ inches.....	46	60
2½ to 5 inches.....	53	66
6 to 13 inches.....	41	58

Iron and Steel Scrap.—The violent decline in prices of Scrap has brought about some inquiry and more tonnage is being asked for by consumers than for some time. One leading consumer has bought 3000 tons of Heavy Melting Scrap on the basis of \$15, Pittsburgh, or \$15.85 delivered.

In some quarters the belief is expressed that prices of Scrap are about as low as they will go for some little time and that this view is shared by consumers is shown by the fact that they are in the market with inquiries. Prices have not declined further during the week, dealers quoting about as follows, all in gross tons, f.o.b. Pittsburgh: Heavy Melting Scrap, \$14.75 to \$15; Cast Iron Borings, \$9 to \$9.25; Bundled Sheet Scrap, \$13.50 to \$13.75; No. 1 Wrought Scrap is very weak and there is no demand, dealers quoting about \$17 for it; Old Steel Rails, short pieces, are \$14.75 to \$15; long pieces for rerolling, \$16 to \$16.50; Machinery Cast Scrap, \$15.50 to \$15.75; Old Car Wheels, \$18 to \$18.25; Steel Turnings find no market in the Pittsburgh district, but bring about \$12, Youngstown.

Coke.—The uncertainty as to whether there will be a Coal strike has firmed up prices on Coke to some extent and there is more inquiry. We note a sale of 3000 tons of standard Connellsville Furnace Coke, equal deliveries in April and May, on the basis of about \$2.20 a ton at oven. The output of Coke continues heavy, the Upper and Lower Connellsville regions having made last week 380,753 tons. The Mahoning Works of the Cambria Steel Company has been shut down for an indefinite period. We quote strictly Connellsville Furnace Coke at \$2.20 to \$2.30 and strictly Connellsville 72-hour Foundry Coke at \$2.75 to \$3 a ton, these prices being for March and April delivery. There are still very large stocks of Coke piled up in the Connellsville region, but these are being moved a little more freely. Car supply all through the winter months has been good and there has been no interference with shipments for lack of cars. Main lines of Furnace Coke made outside the Connellsville region have sold as low as \$1.60 a ton, but are now held at about \$1.75 at oven. The same brands of Foundry Coke are being offered at \$2.25 to \$2.50 a ton at oven.

The Republic Iron & Steel Company is now removing its general offices from the First National Bank Building, Chicago, to the Frick Building Annex, Pittsburgh, occupying the seventh, eighth and ninth floors of the building and about 75 rooms. The work of removal of the offices from Chicago to Pittsburgh will be completed this week.

Cleveland.

CELELAND, OHIO, March 6, 1906.

Iron Ore.—Rumors are beginning to get around of efforts on the part of the big shippers to break the Ore rates for lake transportation both on contracts and wild cargoes. The general prediction is that the effort will be successful. United effort on the Coal rates in the past week resulted in a reduction of what has been considered the opening rate. Shippers have only placed part of their Ore, and in the case of some houses the amount covered by charters is said to be small. Shippers are laying their plans on the known increase in the carrying capacity of the lake fleet and the expectation of a long season of navigation. It is said now that the next contracts will be made on the basis of 70c. from the head of the lakes. Established rates, however, are 75c. from Duluth to Ohio ports, 70c. from Marquette and 60c. from Escanaba. Ore prices are steady at \$4.25, f.o.b. Lake Erie ports, for Old Range Bessemer, base.

Pig Iron.—The demand is on the increase, if inquiries are any criterion. It is apparent that many of the larger consumers have been making inquiry without placing orders, evidently expecting lower prices later. At the same time some of the furnaces not filled up have accepted a reduction and some No. 2 Foundry has been sold at \$17 in the Valleys, although the general quotation is \$17.25. The Cleveland producers have been getting \$17.50 at the furnace. Consumption has continued heavy, the furnaces shipping all they make and finding it is being rapidly consumed. The Southern furnaces have been doing a little business in this territory at \$14, Birmingham, for No. 2, with reports that this price has been shaded in a few instances. The Coke situation is stronger. Cars are again becoming scarce and the fear of a Coal strike is causing some accumulation of stocks.

Finished Iron and Steel.—The market has taken on a distinctly easier tone in the past week or ten days. The remark was made by a producer that while inquiries are appearing from all quarters, Cleveland does not seem to be taking its regular portion of the material. This is partly explained by the fact that most of the big jobs now being done in this city are by outside contractors who buy their Steel in other centers; it is said further that Cleveland is not prolific at the present time in new enterprises demanding Steel. The Structural trade is holding about as it was, with an undercurrent of feeling that conditions are working easier. It is as yet too early to tell the influence on the market of the new productive capacity. One incident may be cited, however. A new Eastern mill took a good sized order out of Cleveland last week and word came this week that deliveries had already been made. Some of the Pittsburgh mills lost the business because they could not put the order into the mills until this week. At the same time it

is reported that another Eastern mill is still selling material at a premium for quick shipment. In Plates the situation is apparently easier. New orders are scarce, and while some mills still have plenty of work ahead it is apparent that more of the contracts are rapidly being filled without new orders to take their places. An important producer states that orders can be taken for delivery in three weeks for any size. In Steel Bars the new demand is unexpectedly light, although shipments on old contracts continue heavy. The basis is unchanged from 1.50c., Pittsburgh, for both Bessemer and Open Hearth. The Bar Iron trade is uneven. Many of the mills are sold up on the lower price level, and have little to offer before July 1. Other producers have material for sale and are quoting a variety of prices. The general quotation is from 1.75c. to 1.80c., at the mill. The Billet situation is exceptionally strong. One of the larger mills, heretofore a seller of Steel to some extent, announced its withdrawal from the trade until its own demand at the mills is lighter. Another important interest is sold up. Most of the supply in this territory comes from smaller mills. One at Chicago is quoting \$35, at the mill, for Forging Billets. One consumer has been making frequent inquiries in the market for Billets, from a few tons to several hundred tons, but without being able to supply his needs. Sheet prices have held up well and jobbers are at present doing the bulk of the business. From stock prices remain at 2.15c. for No. 15 Black, 2.70c.; for No. 28, one pass cold rolled, and 3.70c. for No. 28 Galvanized Sheets. The Rail trade is quiet, most of the demand in that quarter having been satisfied.

Old Material.—The demand from the mills has shown some improvement, but in view of the weakness in the Pig Iron trade the Scrap market is prone to act in sympathy. While no reductions have been made the market is soft, there being an abundance of material on hand. The following are dealers' prices to the trade, f.o.b. Cleveland, gross tons: Old Steel Rails, \$16.50 to \$17.50; Old Iron Rails, \$23 to \$23.50; Iron Car Axles, \$16.50 to \$17.50; Heavy Melting Steel, \$16 to \$16.50. Net tons: Cast Borings, \$8.50 to \$9; No. 1 Busheling, \$15; No. 1 Railroad Wrought, \$17 to \$18; Iron Car Axles, \$22 to \$23; No. 1 Cast, \$15; Stove Plate, \$11; Iron and Steel Turnings and Drillings, \$11 to \$12.

Birmingham.

BIRMINGHAM, ALA., March 5, 1906.

Pig Iron.—A close canvass of the situation fails to disclose any orders of moment this week and only a few scattering inquiries. Buyers and sellers are both apparently resting on their oars, waiting to see what the morrow will bring forth. There are many sides to the question and the outcome depends largely on which side is most persistent in its demands. While the production is large, the consumption is enormous and no stocks are accumulating in this section of the country. It is pretty generally conceded that a majority of the melters are covered for their requirements for the first half of the year; likewise the output of the furnaces is sold for the same period. In view of these facts the furnacemen claim that as prices have been maintained thus far, and the date for making contracts for third quarter delivery is so near at hand, any concession on their part at this time is not warranted. Furthermore, the bear talk has prevented many purchasers who usually place their contracts for Iron some time in advance from entering the market, which will have a tendency to force a concerted buying movement shortly, and prices, they believe, will respond accordingly. On the other hand, some of the producers like to have their output booked pretty well ahead, or at least a sufficient quantity of it to know just where they stand, and in the event of the buyers playing a waiting game are likely to lose their nerve and make a price to take the business. There is evidently a tacit understanding among the larger producers in this district, who are making strenuous efforts to maintain prices, and while it is impossible to predict the outcome with certainty the chances favor present or higher prices for third quarter delivery.

Cast Iron Pipe.—Every foundry in the district practically cleared its yards before March 1, on account of the advance in freight, and shipments can now be forwarded only as fast as the material can be assembled. Many orders for small quantities are being booked, which in the aggregate amount to considerable tonnage, but most of the foundries are running on old contracts, which will require some months to complete. Prices on Water Pipe are firm at approximately following figures per gross ton, f.o.b. cars here:

4 to 6 inch.....	\$27.00
8 to 10 inch.....	26.00
12 to 20 inch.....	25.00
24 to 48 inch.....	24.00
Gas Pipe, \$1 per ton extra.	

Old Material.—Scrap is still very weak, although a slight improvement is reported over last week. Dealers are carrying large stocks, on which they are quoting about as follows per gross ton, f.o.b. cars Birmingham:

Old Iron Rails.....	\$19.50 to \$20.00
No. 1 Railroad Wrought.....	17.00 to 17.50
No. 2 Railroad Wrought.....	16.00 to 16.50
No. 1 Country Wrought.....	15.00 to 15.50
No. 2 Country Wrought.....	14.00 to 14.50
Wrought Pipe and Flues.....	12.00 to 12.50
Mixed Steel.....	11.50 to 12.00
No. 1 Machinery Cast.....	11.00 to 11.50
Stove Plates and Light Cast.....	10.00 to 10.50

The Woodward Iron Company has filed a declaration increasing its capital stock from \$2,000,000 to \$3,000,000. It is supposed the additional capital is to be used for new developments, but just along what line is not known, as a statement from those in authority is unobtainable. It is understood that one of its furnaces is to be put on Basic Iron shortly, to be sold in the open market, which probably means a desire to test its Iron for Steel making before erecting a plant of its own.

Cincinnati.

FIFTH AND MAIN STS., March 7, 1906.—(By Telegraph.)

Pig Iron.—Buyers are still holding off. They do not seem to have much interest in the market at present, possibly hoping that when it actually becomes necessary for them to again renew their supply they may be able to do so at a somewhat lower price than obtained to-day. Southern furnaces have been put to serious inconveniences owing to the car supply being inadequate to carry forward contracts that had been made prior to the advance in freight rates and which were largely contingent upon their being moved before that change should become effective. The new rate now applies on all contracts, whether made previous to or after March 1. In this connection we feel that there is due our readers a correction, especially as it may have affected some industries who base their sales for the month on this first issue of *The Iron Age* for that month. As the previous issue of this paper was dated March 1, Birmingham rates should have been quoted at \$3 and Southern No. 2 scheduled at \$17, Cincinnati. Reports received indicate that the rolling mills and malleable shops have contracts extending far into the future, with most of the local foundries well covered. Prices as a rule have not changed on either the Northern or Southern product as yet. Sales have been in most instances of small tonnage. Car Wheel Irons are reported in limited supply and strong. We learn of an inquiry from a central Ohio melter for 500 tons of Southern No. 2 for second quarter delivery. Freight rates from Hanging Rock district to Cincinnati are \$1.15 and from Birmingham \$3. We quote, f.o.b. Cincinnati, as follows:

Southern Coke, No. 1.....	\$17.50
Southern Coke, No. 2.....	17.00
Southern Coke, No. 3.....	16.50
Southern Coke, No. 4.....	16.00
Southern Coke, No. 1 Soft.....	17.50
Southern Coke, No. 2 Soft.....	17.00
Southern Coke, Gray Forge.....	15.25
Southern Coke, Mottled.....	15.00
Ohio Silvery, No. 1 (8 per cent. Silicon).....	21.65
Lake Superior Coke, No. 1.....	\$18.65 to 19.15
Lake Superior Coke, No. 2.....	18.15 to 18.65
Lake Superior Coke, No. 3.....	17.65 to 18.15

Car Wheel Irons.

Standard Southern Car Wheel.....	\$24.00
Lake Superior Car Wheel.....	22.50

Coke.—The demand is good and the market is fairly strong. Reports indicate that there is not so much Coke on the market as there has been, owing to a number of consumers contracting ahead in anticipation of trouble in the Coal districts. We quote the best brands of Foundry from \$2.90 to \$3.25, f.o.b. ovens.

Finished Iron and Steel.—Trade continues to show great activity and the indications are exceptionally good for early spring developments. We quote, f.o.b. Cincinnati, as follows: Iron Bars, in carload lots, 1.75c., with half extras; the same, in smaller lots, 2c., with full extras; Steel Bars, in carload lots, 1.63c., with half extras; the same, in smaller lots, 1.85c., with full extras; Base Angles, 1.73c., in carload lots; Beams and Channels, in carload lots, 1.73c.; Plates, ¼-inch and heavier, 1.73c., in carload lots; in smaller lots, 1.90c.; Sheets, 16-gauge, in carload lots, 2.15c.; in smaller lots, 2.70c.; 14-gauge, in carload lots, 2.05c.; in smaller lots, 2.60c.; Steel Tire, ¾ x 3-16 and heavier, 1.8c., in carload lots.

Old Material.—The Scrap Iron market is reported to be a little slow, and while there are deals continually pending there is nothing that can be found that changes the situation from that of last week. We quote dealers' prices, f.o.b. Cincinnati, as follows: No. 1 Railroad Wrought Scrap, \$15 to \$15.50 per net ton; Cast Borings, \$8.50 to \$9 per net ton; No. 1 Cast Scrap, \$12 to \$13 per net ton; Iron Rails, \$22 to \$22.50 per gross ton; Steel Rails, rolling mill lengths, \$15 to \$16 per gross ton; Relaying Rails, 56 lbs. and upward, \$28 to \$29 per gross ton; Iron Axles, \$24 to \$24.50 per net ton; Car Wheels, \$18.50 to \$19.50 per gross ton; Low Phosphorus Scrap, \$18 to \$19 per gross ton.

One of the furnaces of the Sheffield Coal & Iron Company has been blown out for the purpose of relining. La Follette Furnace, which went out of blast several months since for

remodeling, has been completed and was put into blast March 1. The Robert Field Sales Agency, Cincinnati, has been appointed sole agent for the output of this furnace.

New York.

NEW YORK, March 7, 1906.

Pig Iron.—In this district there has been a fair amount of buying both for prompt and for forward delivery at unchanged prices. There are a number of inquiries in hand for the near and for the more distant future. Prices remain unchanged at: Northern Iron, No. 1 Foundry, \$18.50 to \$19; No. 2 Foundry, \$18 to \$18.50; No. 2 Plain, \$17.50 to \$18. Southern Iron is quoted at \$18.50 to \$18.75 for No. 1 Foundry and \$18 to \$18.25 for No. 2 Foundry.

Steel Rails.—The principal order placed in the past week was 22,000 tons for the Atlantic & Birmingham. Interest attaches also to an order for 4000 tons placed by ex-President Ramsey of the Wabash for a new Ohio line, the Lorain Southern. A contract placed a short time ago and first reported this week is for 5300 tons for the Texas Central. Trolley line business has been excellent, and there is still a good tonnage to be provided for on this account. The Tennessee Coal, Iron & Railroad Company's Rail mill is booked into February of next year. An interesting inquiry recently received was for 45,000 tons of Basic Open Hearth Rails for 1907 delivery. The road in question has not been a user of Open Hearth Rails thus far. The New York Central has bought 5000 tons additional in the past week.

Structural Material.—The decision of Structural Steel manufacturers to book business for delivery for the second half of the year has not been followed by any large new contracts. Consumers have been most interested in securing deliveries on orders already in. Of the large buildings planned in New York, particularly in the district adjoining lower Broadway, none have come to the contract stage in the past week, though as spring advances activity in these projects is looked for any day. In the past week the American Bridge Company closed for 1200 tons for a car shed for the Interborough Rapid Transit Company. In connection with the McAdoo tunnel terminal, it is stated that with the additional ground secured recently the requirements of Steel will be increased by 10,000 tons, or to nearly 40,000 tons. Among other contracts booked by the American Bridge Company are mentioned 1100 tons for a forge shop, trestle and runways for the American Shipbuilding Company's plant at Lorain, Ohio; 1700 tons of bridge work for the Atlantic & Birmingham Railroad, 8000 tons for the Lake Shore and 1200 tons for the Atchison, Topeka & Santa Fé. Since the opening of the month the bookings of the above company have been 10,000 tons. The McClintick-Marshall Construction Company has a contract for an acid chamber building for the Tennessee Copper Company calling for 450 tons of Steel. The favorable weather conditions have much more than made up for the interference of labor troubles, and a very large amount of new work is now about to be entered upon. We continue to quote on mill shipments f.o.b. New York as follows: Beams, Channels, Angles and Zees, 1.84½c.; Tees, 1.89½c.; Bulb, Angles and Deck Beams, 1.99½c. Beams, 18 to 24 inch, 0.10c. extra; Angles over 6 inches, 0.10c. extra.

Bars.—Buyers are still purchasing quite sparingly. General specifications for Bar Iron are quoted at 1.74½c. to 1.79½c., tidewater, New York. Steel Bars are unchanged at 1.64½c. to 1.84½c., tidewater, according to quantity and delivery desired. A new Steel list of extras is out on half rounds and half ovals which makes a slight advance on these shapes.

Plates.—While the Eastern mills continue to be well supplied with work local sales agents find the demand light in this immediate territory. A revival of activity in the shipyards would be very greatly welcomed. Information from New England is to the effect that a contract has been placed with the Fore River Ship & Engine Company, Fore River, Mass., by the Brunswick Steamship Company for four 3000-ton modern freight steamships. This should furnish a fair tonnage of Plates to some of the manufacturers. Quotations are continued as follows, at tidewater: Sheared Tank Plates, 1.74½c. to 1.84½c.; Flange Plates, 1.84½c. to 1.94½c.; Marine Plates, 2.14½c. to 2.24½c.; Fire Box Plates, 2.24½c. to 2.60c., according to specifications.

Cast Iron Pipe.—The foundries were never busier in March than they are now. Small orders continue to come in freely, making a quite satisfactory volume of new business. Prices are firm, with carload lots quoted at \$29.75 per net ton for 6-inch, at tidewater.

Old Material.—An urgent demand is still noted for Heavy Cast Scrap and Stove Plate. At present it is believed that hardly 2000 tons of such material is to be found in dealers' yards in this vicinity. An increased demand has been observed for Cast Borings. One inquiry called for 2500 tons, but it is not known whether it was filled. It is reported that one or two lots of No. 1 Railroad Wrought Scrap were sold at \$20.50, eastern Pennsylvania. Wrought

Pipe has also been sold at \$14.50 to \$15, eastern Pennsylvania. Embargoes on Steel Scrap at the principal consuming plants in eastern Pennsylvania have been lifted on the Pennsylvania Railroad, but are still enforced on the Reading Railroad. It is stated that a great deal of Steel Scrap could be sold if holders were willing to meet buyers' views. Most of it, however, is held by those who are decidedly unwilling to sell even at current figures. The tonnage of Steel Scrap in yards in this vicinity is stated to be scarcely 25 per cent. of what it was October 1. It is stated that some large dealers in the Central West who sold considerable quantities of Scrap Steel in the Eastern market have for the past four weeks been persistent in endeavoring to force quotations lower with the purpose of covering their sales. It is asserted that they had very little on hand when they made the contracts and therefore it would not be surprising to see the Steel market somewhat more active in the near future, as the time is at hand when they must fill their contracts. Rolling Mill Scrap has been quite neglected for the past two months because consumers bought in October and November to cover their winter requirements and have been out of the market since then. A considerable number of the mills, however, have reduced their stock materially and it is not believed that they will be able to keep out of the market many weeks longer. Approximate prices per gross ton, New York or vicinity, are as follows:

Old Iron Rails.....	\$20.00 to \$20.50
Relaying Rails.....	25.00 to 26.00
Old Steel Rails, rerolling lengths.....	16.50 to 17.00
Old Steel Rails, short pieces.....	15.00 to 15.50
Heavy Melting Steel Scrap.....	15.00 to 15.50
Standard Hammered Iron Car Axles.....	24.00 to 25.00
Old Steel Car Axles.....	19.50 to 20.00
No. 1 Railroad Wrought.....	19.00 to 19.50
Iron Track Scrap.....	16.50 to 17.00
No. 1 Yard Wrought, long.....	16.00 to 17.00
No. 1 Yard Wrought, short.....	15.00 to 15.50
Wrought Pipe.....	13.50 to 14.00
Light Iron.....	10.00 to 10.50
Cast Borings.....	9.00 to 9.50
Wrought Turnings.....	12.50 to 13.00
Old Car Wheels.....	18.00 to 19.00
No. 1 Machinery Cast.....	15.50 to 16.00
Stove Plate.....	12.00 to 12.50
Grate Bars.....	10.00 to 10.50
Malleable Cast.....	16.50 to 17.00

Metal Market.

NEW YORK, March 7, 1906.

Pig Tin.—The market is more active than last week and has had a decline and a partial recovery since our last report. On March 1 Tin sold at 36c.; on the 2d and 3d business was done at 35.75c. A decline to 35.50c. on Monday resulted in good business; partial recovery was made on the 6th, when Tin was sold at 35.70c. to 35.80c. There appears to be a feeling that this decline was a healthy one and has brought out some speculative Tin and that the market will now be higher, with better business. Buyers appear to have more confidence in present prices. The sharp decline on the 5th may have been caused by some holders becoming frightened. The stiffening which occurred on the 6th was aided by a higher range of prices from London. To-day's price is firm at 35.80c. In London the market shows a slight decline from last week and closes to-day at £163 2s. 6d. for spot and £162 17s. 6d. for futures. The arrivals so far this month aggregate 675 tons. There are afloat for American ports 2660 tons. Statistics as compiled by C. Mayer, secretary of the New York Metal Exchange, are as follows:

Total visible supply for Europe and the United States, Tons.	
February 28, 1906.....	13,414
Against visible supply January 31, 1906.....	14,286
Against visible supply February 28, 1905.....	14,911
Against visible supply December 31, 1905.....	13,451
The statistics for the United States—Pacific ports excluded—show that stocks on February 28, 1905, amounted to 2461 tons.	

Copper.—The market is firmer, and there has been more business, but nothing which could be called good buying has as yet resulted. Several sales of 100,000 or 200,000 lbs. have been made for delivery during March, April and May. The prices have slowly advanced from those quoted last week, and to-day's range might be quoted at 18½c. to 18¾c. for Lake, 18¼c. to 18½c. for Electrolytic and 18c. to 18¼c. for Casting Grades. Sales of special brands have been made at higher prices than those quoted above. The European markets have been considerably firmer and closed to-day at £79 15s. for spot, £78 5s. for futures and £84 15s. for Best Select. Some Copper has recently been re-exported from the Orient and sold in the London market at about £2 discount from existing quotations. This £2 difference is not so much a lower quotation, as this Copper was shipped in ingots and consequently must be remelted and run into bars. The exports so far this month aggregate 3491 tons. The exports of domestic Copper from Atlantic ports for the month of February were 15,201 tons, the total exports since January 1, exclusive of Southern and Pacific ports, for February, aggregating 30,508 tons, against 38,753 tons during the corresponding period last year. The importations of Copper with Ores, Matte and Regulus

reduced to fine Copper aggregate 8230 tons, against 6850 tons during the corresponding period last year.

Spelter.—There has been considerably more business in the Spelter market, and prices have advanced slightly. On Monday 6c. was bid in St. Louis with no offerings. On Tuesday sales were made at 6.05c. to 6.10c., St. Louis, and 6.15c. to 6.20c., New York. The London market is slightly lower at £24 10s.

Pig Lead.—There has been but a moderate demand, and sales for spot delivery have been made on a basis of 5.35c. to 5.40c. for spot and 5.30c. to 5.35c. for shipment from the West. In St. Louis the market is unchanged at 5.27½c. The London market closes to-day at £15 15s.

Antimony.—A fair demand is going on for spot stocks, but there is a scarcity of metal in New York and also of Ore in Germany. Hallett's is held at 15.25c. to 16c.; other grades at 14.87½c. to 15.25c.

Nickel.—The market is steady at 40c. to 45c. for large lots, and 50c. to 55c. for smaller quantities.

Quicksilver.—The market is quiet and steady at \$41 per flask of 75 lbs. in 100-flask lots and \$42 for jobbing lots. Domestic orders in San Francisco are held at \$39 and export at \$38. The London market is steady, Rothschild's price being unchanged at £7 7s. 6d., second hands selling at £7 10s.

Tin Plate.—There is a little better demand from consumers and some complaint is being made that shipments from the mills are not as prompt as they should be. The price continues at \$3.69, f.o.b. New York, and \$3.50, f.o.b. Pittsburgh. In Swansea the price is unchanged at 12s. 9d.

Old Metals.—The demand is but fair, although dealers have advanced quotations slightly to bring Old Copper up to the level of Ingot Copper. Still they are not disposed to accumulate any stock. We quote selling prices as follows:

	Cents.
Copper, Heavy Cut and Crucible.....	17.50 to 17.75
Copper, Heavy and Wire.....	16.75 to 17.25
Copper, Light and Bottoms.....	15.25 to 15.75
Brass, Heavy.....	11.75 to 12.00
Brass, Light.....	10.00 to 10.25
Heavy Machinery Composition.....	15.50 to 15.75
Clean Brass Turnings.....	10.50 to 10.75
Composition Turnings.....	13.00 to 13.25
Lead, Heavy.....	5.00 to 5.15
Tea Lead.....	4.85 to 4.90
Zinc Scrap.....	4.90 to 5.10

Iron and Industrial Stocks.

NEW YORK, March 7, 1906

The stock market was depressed for the greater part of the past week, the immediate cause being uncertainty as to the course of money. For some little time money has been less plentiful and the interest rate on call loans has been advancing. The extreme point since our last report was reached on most stocks on Monday, when the following low prices were made: Car & Foundry common, 39½; Locomotive common 64½; Colorado Fuel 57; Pressed Steel common 49¼, preferred 96; Railway Spring common 54¼; Republic common 26¾, preferred 101; Sloss-Sheffield common 75; Tennessee Coal 146½; Cast Iron Pipe common 45; United States Steel common 39½, preferred 104¼. The depression continued until Tuesday morning, when a recovery set in which caused good advances in quite a number of instances. The Can stocks did not participate in the recovery. Last transactions up to 1.30 p.m. to-day were made at the following prices: Can common 9¼, preferred 66½; Car & Foundry common 41, preferred 101¼; Locomotive common 66½, preferred 116; Steel Foundries common 11¼, preferred 45½; Colorado Fuel 60¼; Pressed Steel common 50½, preferred 98; Railway Spring common 56; Republic common 28¾, preferred 103; Sloss-Sheffield common 77½; Tennessee Coal 149¼; Cast Iron Pipe common 45½, preferred 92; United States Steel common 40, preferred 105¼.

Dividends.—Cambria Iron Company has declared a quarterly dividend of 2 per cent., payable April 2.

Railway Steel Spring Company has declared a quarterly dividend of 1¼ per cent. on the preferred stock, payable March 20.

American Can Company has declared a quarterly dividend of 1¼ per cent. on the preferred stock, payable April 2.

Artificial sandstone bricks for building purposes are being manufactured in British Columbia by a new process. Sand and limestone are mixed together and the latter hydrated in a mold in which a vacuum is produced. There being no space allowed for the expansion of the lime on hydration, compression of the material results. The brick is further compressed in stamps of high pressure and then passed into steam boilers and kept in a current of steam for eight or ten hours. This causes a chemical combination of the sand and lime into hydrosilicate of lime. The lime acts as a cement, uniting the particles of sand together and producing a brick of exceeding hardness and practically impervious to moisture.

The Machinery Trade.

NEW YORK, March 7, 1906.

It is remarkable how good and steady the demand for machine tools continues in the absence of any large lists being closed or figured upon. The trade is well satisfied with this class of business, not only because it shows a healthy condition and distributes the orders over a wider field but because it eliminates spasmodic buying, which usually prevails when the principal business is obtained from the closing of large lists of machines and tends to make the business of the immediate future certain. There is a great deal of satisfaction in feeling that the trade is on such a stable basis, and though merchants are much gratified with the business they are doing yet considerable comment is being made on the absence of extensive lists. The lists look good and the results of bids are pleasant to anticipate. Many of the large corporations which are known to require large quantities of machinery are buying small lots almost daily. When inquiries are sent out they go to but few, an order for a machine or two is given, which is soon followed by another. In discussing the situation generally an important machinery merchant gave it as his opinion that extended deliveries were responsible for the nonappearance of lists to figure on. Knowing that any quantity of machinery cannot be delivered for months the companies appear to be keeping their eyes open and picking up a few tools here and there whenever reasonable delivery can be had in the hope of gradually supplying their requirements. In this way, it is thought, complete equipment can be obtained in less time than if a list is issued on account of the many delays attending competitive bidding.

The open winter has to all appearances affected the ice trade to such an extent that the supply of ice from New England and other sources will be limited, and consequently a shortage in supply will in all probability have to be filled with artificial ice. Manufacturers of artificial ice have already awakened to the opportunity offered them and many of them are preparing to enlarge their plants. This has had a decided effect upon the manufacturers of ice producing machinery and the trade in that line will be kept busy for a while filling existing orders and those in prospect for which inquiries have been issued. There are few large manufacturers of artificial ice who have not already prepared plans for enlarging their plants, and from many sources come inquiries from those who desire to enter the field with new manufacturing. The fact that there will be a decided shortage in the supply of natural ice at apparent, and the artificial ice-men will be given a good chance to compete for business. Some manufacturers of machinery who have made ice making machinery a side line are preparing to enlarge their product in that respect, and it is apparent that they will have plenty to do even with increased facilities. As is the case in almost every line of increased trade, the power machinery men will get their share of the business, and it is expected that the trade in small types of power machinery will be materially benefited by the demand.

The machinery men who were rushed during the last few weeks filling export orders for Germany have enjoyed some respite this week, although this does not mean that business in that line is by any means poor. They are simply taking more time about filling the orders they have on hand. They expect they will be kept busy for some time to come. One effect the agitation over the tariff question had was to draw the attention of German manufacturers to certain kinds of American machinery, and it acted in a measure as an advertisement for some American goods. Some of the machinery men had to resort to strenuous measures to fill promised orders, and one instance was noted in the trade where a manufacturer of machine tools in New England was obliged to have the parts of a machine promised for delivery before the tariff went into effect, expressed to New York, and the machine was assembled here and hurried to the dock just in time to be freighted on the last steamer by which it was possible to ship goods in time to escape the extra tariff.

Association Notes.

The fact that the American Supply and Machinery Manufacturers' Association and the Southern Supply and Machinery Dealers' Association will hold their annual meetings at St. Louis March 14, 15 and 16 affords the two organizations an opportunity of holding joint meetings that will undoubtedly result in benefiting both sides of the trade through an interchange of views on subjects of mutual interest. According to the programme of the American Supply and Machinery Manufacturers' Association, which has been issued, the Southern Supply and Machinery Dealers' Association has invited the members of the other organization to attend their opening session at 10 a.m. on Wednesday, March 14, after which, at 2.30 p.m., the Manufacturers' Association will go into executive session and a theatre party followed by a luncheon will be held in the evening. On Thursday, at 10 a.m., the manufacturers will hold an executive session and they will meet again in the after-

noon. There will be a smoker in the dining room of the Southern Hotel, where the convention is to be held, at night and an automobile trip during the afternoon for the ladies. On Friday, at 10 a.m., there will be another executive session and a banquet will follow at night. The programme of the business topics to be discussed by the manufacturers at the executive sessions will be prepared before the meeting by the Executive Committee, which will meet the day before the convention opens. The Southern Supply and Machinery Dealers' Association has not as yet issued its programme, but it is understood that there will be the usual reading of papers by prominent members of the organization, and in addition to that it will meet jointly with the manufacturers, and the members will join in the debates or questions affecting the trade. Inasmuch as this will be the first joint meeting of the association it will be an important one, and the topics that will come up for joint discussion will be of great interest to the trade.

The February meeting of the Niagara Frontier Purchasing Agents' Association was held last week at Niagara Falls, N. Y. A dinner was served in the conservatory of the Natural Food Company, the association being the guests of that corporation. The members discussed "System in a Buyer's Office," and they exchanged views regarding the method of arranging and receiving bids and the filing of such data for future reference. The Buffalo members of the organization, numbering about 30, went to Niagara Falls in a special car. There were many expressions of appreciation of the treatment accorded the members and the arrangements for their entertainment were made by P. F. Meek, who is a buyer for the Natural Food Company. There were about 40 members of the association in attendance and that number included all the officers of the organization. George C. Holberton of the California Gas & Electric Corporation, San Francisco, and C. E. Pease of the Dean Steam Pump Company, Holyoke, Mass., were guests of the association, and C. A. Collins of the Boston Union Furnace Company was elected a member of the organization. The March meeting of the association will probably be held at Lockport some time the latter end of this month.

Boiler Manufacturers Merger.

An agreement has been effected between the Stirling Consolidated Boiler Company and the Babcock & Wilcox Company whereby the stock of the two companies will be merged and hereafter, although they will be operated separately, their financial interests will be identical. The new corporation will be capitalized for \$15,000,000, but beyond the financial details the contracting companies will to all outward appearances be separate corporations. The Babcock & Wilcox Company will continue to maintain its main offices at 85 Liberty street, while the Stirling Consolidated Company will remain at 111 Broadway, New York. There is an understanding between those in charge of the two interests regarding trade and it is announced that the merger will not affect prices. It has been whispered in the trade for several weeks that negotiations looking to a consolidation were under way, but until now no official announcement has been made public. There will be no change in the manufacturing arrangements on the part of either of the companies for the present, if at all. It will be remembered that in December last the water tube boiler department of the Aultman & Taylor Machinery Company, Mansfield, Ohio, was consolidated with the Stirling Company, and this later combination makes the organization of the Stirling and Babcock companies a strong one.

Large Steel Plant Requirements.

Machinery is now being purchased in New York by Henry Gray, 68 William street, for the American Universal Mill Company, which is the corporation formed to manufacture structural steel at South Bethlehem, Pa., under the patents purchased by Charles M. Schwab in Europe some time ago. Mr. Gray is the inventor of the method to be adopted by the company, and just now he is buying the equipment for a 40-inch blooming mill, and it is expected that within a day or so the mill equipment and power machinery will be arranged for. This is not all of the machinery to be purchased by the company, as it is understood that the plans include another blooming mill and perhaps considerable equipment for handling structural steel. The company intends to go into the manufacture of structural steel in a large way, and it is probable that even the present plans will be enlarged upon. It is the purpose of those interested to push the work as fast as possible, and within the next few weeks it is expected that considerable buying will be done. A number of big machinery men, especially from the Pittsburgh district, have been in New York during the last day or two with the idea of submitting proposals to Mr. Gray, and from them it is understood that the contracts to be awarded will reach a high figure. No information has been given out as yet as to just how large a plant is to be erected.

The United States Steel Corporation is receiving bids, it is understood, on mechanical stokers to be put in at the Schoenberger works, and estimates on equipment for an electro galvanizing department to be added to the North Wor-

cester works. Some tempering equipment, rope machinery, straightening machinery and insulated wire and cable machinery is to be bought for the same plant. In addition to this the company is receiving bids on large amounts of machinery for its various plants, and the work of awarding contracts is being put through quickly. It is understood that because of the difficulty in getting deliveries the company desires to place its orders as soon as possible, and inquiries placed with the trade are rapidly followed by orders, while a large amount of buying for the various improvements, stated in these columns from time to time, has been done, there is still much more to purchase, and at the various plants from which the orders are given it has been announced that there will be no delay in using up the enormous appropriations made for this year's expenditures in order that those who receive the orders may be able to fill them before the summer is out. Early delivery is asked for all orders placed.

It is probable that the machine tool trade will shortly receive considerable patronage from Milliken Bros., Inc., 11 Broadway, who, it is understood, have not as yet placed their orders for the smaller machinery equipment for their new plant on Staten Island. As has been stated from time to time in these columns the contracts for most of the heavy machinery equipment have been awarded and the minor equipment will shortly come up for consideration. The rapidity with which the other buying has been carried forward will bring the machine tool question to a head some time before the trade calculated, and it is possible that all of the equipment will be purchased before summer sets in in earnest.

The Titusville Forge Company, Titusville, Pa., is to make a number of important improvements to its plant and intends to install some special center crank turning machines, a 72-inch and 84-inch lathe, a large planer, a radial drill and an electric plant with 150 horse-power engine direct connected to generator, together with some special machinery which the company is having built.

In the annual statement of the Pennsylvania Railroad President Cassatt refers to the large amount expended during the past year for improvements and intimates that a very large amount of money is to be expended this year, not only for completing improvements which were begun last year, but for making others, plans for which have not yet been prepared. One of the important improvements contemplated by the company is the establishment of water works along the main line for the purpose of supplying the road with an ample supply of water for the operation of its trains.

Although the purchase of general material has shown no sign of abatement in the Pennsylvania Railroad Company, the purchasing agent has issued no inquiries during the past week for any tools or machinery. There is nothing in any immediate prospect, pending the authorization of the annual tool and machinery programme, except the possible installation of a number of large gantry cranes, for which the authority to purchase has not yet been obtained. The West Jersey & Seashore Railroad electrification is demanding the attention of the officials to a great extent and the energies of every one are being exerted to hasten the completion of this important work. During the past week contracts have been entered into for 46 signal bridges which will be required for the new road.

The Norfolk & Western Railroad has placed scattering orders for a considerable quantity of tools the past week. This road has had inquiries in the market for some weeks.

An order has been placed with the American Locomotive Company by the Erie Railroad for 25 locomotives, delivery to begin this month. The locomotives are to be exact duplicates of the 19 engines delivered by the American Locomotive Company to the Erie during the past six months. These have proven so successful in passenger service that they have been adopted as a standard type by the road and are known as the 2500 class. These locomotives are the largest passenger service engines ever constructed and they weigh 389,750 pounds each, their tenders carrying 16 tons of coal and 8500 gallons of water. They have been put in use on the through Chicago and Buffalo trains of from 12 to 15 cars, and they easily keep up to the schedule time. The engines that have been ordered are to be added to the fast passenger train service of the road, which is being rapidly improved.

The Chicago Pneumatic Tool Company, which is to make extensive additions to its air compressor plant at Franklin, Pa., has decided not to send out a list of the tools it intends to purchase, but to pick up the tools as it may be able to do so. For some time past the company has been buying a few tools at a time and its purchases will continue for some time to come, as a great many additional tools will be required. Mr. Carew, superintendent of the plant at Franklin, has charge of selecting the tools, but purchases are made from the Chicago office.

About the only new equipment needed at the start by the Frick Company, Waynesboro, Pa., for its new boiler shop will be one or two electric traveling cranes, the larger one to be probably of 15 tons capacity and the smaller one of 5 tons capacity. The new boiler shop which the company is

to build will be 100 x 250 feet, and when completed the present boiler shop is to be used as an annex to the machine shop. Other building will be done at the plant during the year which will probably necessitate the installation of considerable new machinery later on.

The General Electric Company is understood to be preparing plans for large extensions to its works at Lynn, Mass., which will include a new foundry and several other large structures.

The Traylor Mfg. Company, Allentown, Pa., has ordered a 25-ton 76-foot span electric traveling crane, with a 5-ton auxiliary hoist, designed for outdoor service, through the New York office of the Case Mfg. Company, 85 Liberty street.

Plans are being prepared by J. G. White & Co., 49 Exchange place, for an extensive system of steam railroads to be built in the Philippine Islands. The Philippine Government some time ago advertised that bids would be received on concessionary contracts for the construction of several roads, and a joint bid submitted by Solomon & Co., Cornelius Vanderbilt, J. G. White & Co. and Charles M. Swift of Detroit, with whom are associated the International Banking Corporation, H. R. Wilson and Heildebach, Ichleheimer & Co. was accepted. The concessions include grants for the construction and operation of the railroads on the islands of Negros, Panay and Cebu. The particulars submitted provide for the full Government guarantee authorized by Congress on 4 per cent. bonds for a period of 30 years on 95 per cent. of the cost of construction. There will be about 100 miles of road on the Island of Negros, and the length of trackage on Panay will amount to about the same figure. Plans are being prepared to build about 95 miles of road on Cebu. The operation and maintenance of the road will necessitate the construction of large shops, round houses and repair plants, and it is expected that the expenditure will be large along those lines. It is probable that the buying will be done by J. G. White & Co., and American manufacturers will be given the benefit of the business. Preliminary plans are now in course of preparation, and it is expected that it will be some weeks before the buying for the equipment will be commenced. J. G. White & Co. have their engineers going over the ground of the proposed roads, and there will be no delay in beginning the work.

W. R. Grace & Co., 1 Hanover square, New York, are constructing an electric railway at Lima, Peru, and the road is being equipped entirely with American electric apparatus and material. The line, which is expected to be in operation about May, is about 30 miles in extent, and the system includes a large power house and a repair plant. The road is located on the west coast of South America, and it is said to be the first of the kind in that section to be constructed entirely by American manufacturers. Heretofore German and English enterprises have captured most of the big railroad and power contracts in the South American countries, but lately American capitalists have realized the possibilities there. In this connection it is interesting to note that even foreign contractors in the South American countries have of late shown a tendency to patronize American industries. This is especially so with power machinery, and it is accounted for in a measure by the fact that shipping facilities from this country to South America are considerably better than they were a year ago. Incidentally Americans are realizing that they can obtain business there by going after it, and they are doing so.

J. M. Robinson, who is chief engineer of the Mills Building at Broad and Wall streets, New York, is purchasing machinery for the new Mills Hotel, to be erected at Thirty-eighth street and Seventh avenue. The hotel will be the largest of the Mills hotels, and power machinery to develop about 500 horse-power will be installed. It is understood that the machinery requirements include pumping apparatus and electric equipment besides elevators, &c.

The Southern Power Company, with main offices at Charlotte, N. C., is operating the Catawba Power Company, which it controls, and is building in Chester County, S. C., the Great Falls power station, in which 40,000 horse-power is being installed. This company owns eight other properties and is planning to develop them as power stations as rapidly as possible, so it is expected that during the coming summer considerable machinery will be purchased. The officers of the Southern Power Company are Dr. W. Gill Wylie, president; B. N. Duke, first vice-president; W. S. Lee, Jr., second vice-president and chief engineer; R. B. Arrington, secretary and treasurer, and W. H. Martin, Jr., assistant secretary and treasurer.

The Diamond Machinery Company, Providence, R. I., manufacturer of grinding and polishing machinery, has opened a salesroom at 18 Dey street, New York, which is under the management of H. F. Frevert, who is well known in the machinery trade. A complete stock of the company's machines will be carried.

Catalogues Wanted.—The Syracuse Supply Company, Syracuse, N. Y., has added a wholesale electric supply branch to its business and would like to receive catalogues from manufacturers of such supplies.

Chicago Machinery Market.

CHICAGO, ILL., March 6, 1906.

Interest continues to center in the purchases of machinery and equipment for the new plant of the Illinois Steel Company at Tolleston, Ind., and extensions to the South Works at South Chicago. Large contracts are now being placed for punching machines, cutting off saws, &c., for the new light rail mill to be erected at South Chicago, and contracts have already been awarded for upward of 20,000 horse-power boilers for these works. The Chicago, Milwaukee & St. Paul Railroad has also issued a new list, comprising 12 large tools for distribution among its shops. Demand for individual tools continues very heavy and dealers are experiencing a bigger trade than during the closing months of last year.

The Chicago, Milwaukee & St. Paul Railroad Company will more than double the capacity of its present car wheel foundry at West Milwaukee in the carrying out of plans now under way. Contract has already been let for the structural steel work on this new building to the Wisconsin Bridge & Iron Company. The capacity of the present plant is 185 wheels per day, which number will be increased to 400 at first and later to 600 daily. The number of employees will be increased by 200 to 250 men. The cost of this addition will be \$130,000. As has already been stated in these columns, the company is now increasing the capacity of its pattern workshop and pattern storage departments.

The C. A. Lawton Company, De Pere, Wis., has decided to build a new machine shop the coming season, present plans calling for a building 100 x 120 feet. A portion of the building will be two stories in height, the second floor to be used for offices. The shop will have a concrete floor and will be equipped with a Pawling & Harnischfeger 10-ton electric traveling crane of 40 feet span. The machinery will be driven by a 75-kw. generator and several small motors from 25 horse-power down will be installed. The machine tool equipment will probably be added to later. The company manufactures power transmitting, saw, paper and pulp mill machinery and makes a specialty of pail and tub machinery.

Gohmann Brothers & Kahler Company, New Albany, Ind., is in the market for five motors ranging from 5 to 30 horse-power each, and also for an up to date quick melting cupola, emery grinders, wood working machines, plating and polishing outfits. The company will build a new foundry, 60 x 400 feet, on a recently purchased tract of land between the Pennsylvania and Baltimore & Ohio Southwestern tracks.

The Wire Specialty Company, Canal and Randolph streets, Chicago, is in the market for new machinery for cutting, straightening, bending, heading and threading wires, and desires catalogues describing such machinery. The company, which is owned by Emmons Collins and John R. Morgan, intends to secure larger quarters, the present plant being entirely too small to take care of the demands for its special and standard wire shapes.

Pfeiffer & Smith, machinists, located at 493-499 Barclay street, Milwaukee, Wis., have taken out a building permit to erect a new brick and stone machine shop at Clinton street near Greenfield avenue, to cost \$18,000. The building is to have a frontage of 49 feet and a depth of 149 feet and is to be two stories high. The firm has been in business at its present location since 1901.

Phelps & Bigelow, Kalamazoo, Mich., contemplate the erection of a new plant for the building of windmills during the spring. The firm owns a site on North Burdick street, on which it is planned to build a three-story factory, 60 x 120 feet. Equipment for the plant has not yet been specified.

A. F. Anderson, Chicago, who is building a factory at 5842-5844 Loomis street for the manufacture of architectural iron work, will buy some machinery for the equipment of the building.

The Engineers' Equipment Company, Chicago, has incorporated to act as agent for manufacturers of machinery. The incorporators are F. W. Dobe, M. Dobe and George A. Strack.

The Foster-Kimball Machine Company, Elkhart, Ind., reports orders on its books for \$90,000 worth of machines, of which one order is for special machinery amounting to \$40,000 and another is for \$24,000. The company makes machinery and supplies especially for and used by automobile, sewing machine, typewriter and screw manufacturing and by brass workers.

The packing firm of Schwarzschild & Sulzberger Company, Chicago, is increasing the capacity of its plants at both Chicago and Kansas City. A new 300-kw. engine and a generator are to be purchased, as well as piping, condensers and other equipment such as is used in packing plants. L. Levy is at the head of the company's mechanical department, which is located in Chicago.

The Madison & Interurban Traction Company, Madison, Wis., is having plans prepared for a new power house, the equipment of which will consist of one 500-kw. direct current generator and one 500-kw. alternating current generator. The Columbia Construction Company, Milwaukee, has charge of the work.

The Erie Heating Company, Chicago, has recently closed a contract with the Duluth & Iron Range Railroad Company to install at Two Harbors, Minn., a power plant of approximately 800 horse-power, consisting of five 150 horse-power boilers, two 250-kw. generators and a complete lighting system.

On February 22 the Chicago office of the National Acme Mfg. Company, Cleveland, Ohio, manufacturer of Acme multiple spindle automatic screw machines, set, cap, machine screws, &c., occupied quarters, with warehouse facilities, in the Edgcombe Building at Clinton and West Washington streets, with offices at 563 Washington street. To give its Chicago and Western customers more prompt service the company will carry a complete stock of its products.

New England Machinery Market.

WORCESTER, MASS., March 6, 1906.

The demand for machinery continues strong and the matter of deliveries is as annoying as ever, as the various manufacturers communicate the condition of future shipments to the dealers and to prospective customers. A few months more will see many shops greatly increasing their product, with the completion of new buildings or the installation of new machinery in existing buildings. Many machine tool shops have increased their product already by better organization, resulting from the necessity of increasing output, and, of course, from the addition of new machinery. Altogether the total capacity of American machine tool manufacturers has greatly increased within the past six months, and another few months will see still farther extensions of output. This will tend to relieve the stress of the market, unless the demand increases correspondingly, which seems possible.

The Boston machinery dealers took initial steps toward organizing a local association at a meeting of the Exchange Club, Thursday, March 1. Charles A. Clarke of Hill, Clarke & Co. took the initiative in the matter and a number of managers and heads of Boston machine tool and supply houses were his guests at luncheon, the meeting following. This action is in response to the suggestion of President E. E. Strong, made in his annual address at the convention of the National Supply and Machinery Dealers' Association at Fort Monroe, of the value of local associations, both for their intrinsic value to members and their aid to the National Association. No formal organization was effected, but preliminary details were discussed and organization will soon be effected along the lines of similar associations already organized in other cities, including New York, Pittsburgh, Cleveland and Cincinnati.

The Wright Wire Company, Worcester, Mass., is to make extensive improvements to its plant at Palmer, Mass. A two-story addition, 40 x 70 feet, will be made to the rope mill, and other additions are contemplated to enlarge the general wire manufacturing facilities. The increase is made imperative by the company's enlarging business. In its past fiscal year 6000 tons of wire were produced, an increase of 30 per cent. over the previous year, and the indications are that the present year will see an increase fully as great.

Boston machinery dealers have received orders for about \$9000 worth of machine tools from the Wood Worsted Mill, Lawrence, Mass., during the past week.

The American Brass Company, Waterbury, Conn., has ratified the recommendations of the Board of Directors and increased the capital stock from \$10,000,000 to \$12,500,000. The additional capital will be used in extending and developing the business.

The Iroquois Machine Company, Providence, R. I., is preparing to take additional manufacturing space in an adjacent building, and the lower floor of the building now occupied will be taken by the Cook-Dunbar-Smith Company, a new corporation, which will manufacture wire, tubing and plate for jewelers and opticians.

Stone & Webster, bankers, Boston, have recently arranged for the purchase of the Columbus Power Company, the Coweta Power Company and the Chattahoochee Falls Company, which together with some additional lands known as the Standing Boy Creek properties give control of all the available water power on the Chattahoochee River between Columbus, Ga., and West Point, 30 miles below, excepting two small completed developments, one in Columbus, the other just below West Point. It is estimated that 75,000 horse-power can be developed within a distance of 15 or 30 miles of the city of Columbus. The properties will be merged in a new company to be called the Columbus Power Company and capitalized at \$4,000,000. The first step of the development will be the construction of a 3000 horse-power steam plant to supplement the existing hydraulic plant of the present Columbus Power Company, which will increase the generator capacity to 11,000 horse-power. Additional hydraulic development will be made from time to time as may be necessary to meet the demands for power.

Sanderson & Porter, 52 William street, New York, have been retained as consulting and designing engineers by the

Consolidated Lighting Company, Montpelier, Vt. In addition to the preparation of designs, plans and specifications for the new work contemplated by the company they have been retained as constructors for the extension to be made to the hydroelectric plant of the Consolidated Lighting Company at Bolton Falls, Vt., and substation construction in Barre, Vt. The capacity of the Bolton Falls generating station will be largely increased in connection with the betterments and improvements which the company has arranged to execute.

The business which has been conducted as the National Wire Works, Hartford, Conn., has been incorporated in Connecticut as the Connecticut Steel & Wire Company, with a capital stock of \$50,000. The company proposes to extend the business, and will manufacture, in addition to wire and grill work, wire goods, novelties and automobile parts. Henry Green is president and C. W. Ferguson secretary and treasurer, both of them formerly connected with the Hartford Woven Wire Mattress Company.

The Martin Skate Company, 611 Old South Building, Boston, Mass., manufacturer of a new folding ice skate, has established a factory at Charlestown, Mass. A considerable amount of equipment has been purchased, but the company will be in the market a little later for other machine tools.

Lewis D. Parker has purchased a controlling interest in the Springfield Elevator & Pump Company, Springfield, Mass., and has been made president and treasurer of the company. Mr. Parker was for years associated with the Hartford Rubber Works and has with him F. H. Turner, who was with him in that company. The company manufactures hydraulic, electric and belt power elevators. Mr. Parker states that the plant will soon be considerably enlarged, but plans are not fully matured and nothing can yet be given out concerning machinery requirements.

Philadelphia Machinery Market.

PHILADELPHIA, PA., March 6, 1906.

While there has been a fairly good run of inquiries for tools and machinery in this territory during the week, the amount of new business which has developed, from both the recent as well as older inquiries, has been rather small. The same tendency to defer purchases which has characterized the market for the past month is strongly in evidence, and very few orders of any size have been booked. The present lull is quite generally attributed to that still uncertain quantity—a possible coal strike—which has apparently not only affected the purchase of equipment from those located in the coal mining districts, but also from the greater portion of the railroads in this territory. Such sales as have been made have been mostly of the single tool order. Orders covering more than a few tools in any one lot have been exceedingly scarce for some weeks past. The railroads have placed a few scattering orders, confined to a few tools of various classes, mostly for replacement. Specifications covering any general equipment have not been received in this territory for some little time.

The inactivity as far as new business is concerned is not viewed with any degree of apprehension, as conditions covering the manufacture of both tools and machinery are in very satisfactory shape. It may be recalled that during December of last year orders were booked in extraordinarily large quantities; almost every one who could anticipate requirements for the present year rushed in orders, in order to get, if possible, both price concessions and more desirable deliveries. Much of this business, under an ordinary condition of affairs, would have been spread out over the first three months of the present year at least, and would have no doubt brought the general average business for that period about to a normal condition.

Manufacturers, almost without exception, are exceedingly busy, and with the amount of new work coming in from day to day find that they are not able to catch up to any great extent on deliveries. In a few instances it is even a little harder to get shipments than it was several months ago, but as a general rule delivery dates have changed but little.

The demand for second-hand machinery and for tools of the better grades is well maintained. The inability of prospective buyers to obtain new tools with any degree of promptness is largely responsible for the increased volume of business in this branch of the trade.

Both gray iron and steel castings continue in good demand. Manufacturers of machine tools do not complain as much as they did some time since regarding deliveries of gray iron castings, the makers of which are improving their condition steadily and are now in better shape than at any time since their late labor difficulties. Steel casting plants continue to have as much business offered as they can take care of and good deliveries are hard to get on some classes of work.

George E. Randles, resident manager of the Philadelphia branch of Manning, Maxwell & Moore, and who opened the local branch of that firm and has had charge of its business for over five years, has tendered his resignation, taking

effect March 15. Mr. Randles will enter the firm of Foote, Burt & Co., Cleveland, Ohio, manufacturers of multiple spindle drills and a line of bolt cutters, drills, &c., which has recently been purchased from the Reliance Machine & Tool Company of the same city. Frank Bancroft, who has represented the Philadelphia branch of Manning, Maxwell & Moore in this territory for over two years, will succeed Mr. Randles as resident manager.

The C. H. Wheeler Condenser & Pump Company, in order to avoid confusion and delay in its business, owing to some similarity between its corporate title and that of another concern, has decided to change its corporate name and will be known hereafter as the C. H. Wheeler Mfg. Company. The change was made effective March 1.

Wilson, Harris & Richards, architects and engineers, have awarded the contract for the addition to the machine shop of the Pratt & Whitney Company, Hartford, Conn., to Wm. F. O'Neil of that city. The structural steel contract was let to the Berlin Construction Company, Berlin, Conn. The addition, as previously mentioned, will be four stories high, 75 x 300 feet, and fireproof construction throughout.

Estimates will shortly be asked by the Filtration Bureau, city of Philadelphia, for pumps to be used at the Torresdale filter beds for lifting the water from the Delaware River at that point. Plans are also being prepared for additional machinery of various classes for use in connection with the same work. Details regarding the above are not yet available.

M. W. Easby, architect and engineer, Crozier Building, this city, is receiving estimates for a new power plant, 50 x 125 feet, and a two-story office building for the Ajax Metal Company. Both buildings are to be of brick and steel. The major portion of the power equipment has already been placed.

The Espen-Lucas Machine Works notes a very good demand for its various tools, particularly for the larger sized cold saw cutting off machines, chank shaft turning machines and for boring mills. Inquiries continue in good volume, and sufficient orders are being taken to keep the plant operating continuously at its full capacity. Deliveries recently have been heavy, and include I-beam, bar, foundry and forge cold saw cutting off machines. Horizontal floor boring, milling and drilling machines and grinding machines have been shipped to a number of buyers in the Middle West and the New England States, as well as to parties located in this State and city.

H. B. Underwood & Co., whose fiscal year has just closed, state that the past year was the best in every respect that they have ever experienced. Orders continue to be received by them in good volume, while inquiries are about as numerous as they have been for some time. In their general line of machine and repair work they keep exceedingly busy, and all departments of their plant are being operated at full capacity. Recent deliveries of radial planer attachments, portable boring bars and rotary planing machines have been made to both Southern and Western railroads, while delivery of a second rotary planing machine with six weeks' time has been made to Canada.

The Newton Machine Tool Works, Incorporated, reports a good demand for its various machine tools, particularly for bridge tools, chord boring machines, rotary planing machines and cold saw cutting off machines. Inquiries for portable tools and special machinery have also been quite good, and a large number of satisfactory orders have been booked, including among others two No. 2 key seat milling machines for export to England and another of the same type for export to Germany; a 10-inch motor driven crank slotter and two motor driver cylinder boring machines are to be furnished a large electric concern. A No. 2 duplex milling machine for milling large nuts and an improved No. 4 plain milling machine are to be shipped for export to the Peruvian Corporation, Peru, for railroad work. The Four Wheel Drive Wagon Company, Milwaukee, Wis., has ordered a No. 3 horizontal slab milling machine; a No. 2 double spindle boring machine with fixed centers, and another No. 2 machine with traveling bars. Orders for a number of cold saw cutting off machines, both of the bar, steel foundry and combination types, have also been booked for both local and out of town delivery.

Cincinnati Machinery Market.

CINCINNATI, OHIO, March 6, 1906.

Machine tool builders say there is no change in the situation and that they have all that they can possibly do for months to come. The knowledge of this fact, however, does not have a tendency to diminish inquiries, but forces them in many instances to lose business that otherwise would come their way. As a rule all the shops are from three to six months behind in deliveries and there is an apparent utter inability to supply the existing demand. While reports indicate that foreign trade generally is very active, Germany and France in particular are urgent in their demands for immediate shipments of tools. Coming as it does just at this time, when the relations between the two countries are

somewhat strained, it is thought by some to be significant, but whether such is the fact or not is mere conjecture. The demand for American tools from the French automobile industries continues unabated and shipments from this city during the year have been very heavy.

A number of Cincinnati capitalists have interested themselves in the Casey-Hedges Company, Chattanooga, Tenn., by having bought out the share of one of its founders, and will continue to manufacture steam boilers, engines, steam pipe and plumbers' supplies.

The new plant of the Graham-Phillips Horseshoe Company is being pushed forward as rapidly as possible. A number of cars of structural steel have already arrived and the work of erection has begun. The mill has been shipped and a portion of the machinery is already on the ground. The boilers and engines, which are of the Hamilton-Corliss make, are being placed in position, and it is hoped all will be in readiness for operation not later than May 1.

The Lodge & Shipley Machine Tool Company is far behind in its orders, with new work coming forward rapidly. Considerable export trade is being done with Continental Europe, being widely distributed. Home consumption is said to be enormous, so that between the two it requires strenuous efforts to satisfy all concerned.

The John Steptoe Shaper Company is from three to six months behind in its orders. Two lathes and planers have recently been added to the shop equipment and an automatic boring machine will be bought later, for which the company is now in the market. Foreign trade with Japan, England and Belgium is fairly good. It has been necessary during the past four months to work 62½ hours per week in order to meet present necessities.

The King Machine Tool Company is doing considerable in the way of expansion. A building 65 x 115 feet is being added to the present plant which when completed will be used as an erecting shop, thereby allowing the portion of the plant now being used for that purpose to be utilized for other purposes. This addition will be equipped with a 15-ton traveling electric crane, and will be modern in all its appointments. A new heavy duty machine in two sizes has recently been placed on the market that has met with great success. Trade, especially domestic, is reported very good.

The J. A. Fay & Egan Company has a large order for its machines from the German Government. This order is said to represent in the neighborhood of \$50,000, and is one of the largest of its kind ever received. Unusual dispatch is urged in the forwarding of this shipment, the meaning of which can only be surmised. S. P. Egan, who has just returned from a business trip through Canada, reports the machinery interests of that country in a very flourishing condition.

The Bickford Drill & Tool Company reports trade excellent, both foreign and domestic. Particularly is this true as regards France, which is the leading automobile country and from which there is a constant demand for American tools.

The J. M. Robinson Mfg. Company has been running overtime for several weeks. During the past week it turned out seven large corrugating machines and three cornice brakes. A new building has been added to the plant that is utilized for the storage of patterns and castings. Since moving to the new location the capacity of the plant has been more than doubled, and notwithstanding this fact it seems almost impossible to keep abreast of orders received.

Government Purchases.

WASHINGTON, D. C., March 6, 1906.

Specifications have been prepared at the Navy Department, Washington, for two 500-kw. turbo-generators, one 40-kw. motor driven exciter set, one water pressure pump and other apparatus to be installed in the New York Navy Yard.

The material for which the Isthmian Canal Commission is asking bids until March 19 includes forging machines.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until March 20 for a quantity of supplies for the Eastern and Southern navy yards, including valve reseating machine, forges, hydraulic jacks, &c.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until March 27 for the following machine tools for the Pensacola and New Orleans navy yards: Schedule 397, pipe bending machine, slitting shear, gap shear; schedule 398, air and circulating pump.

The Bureau of Supplies and Accounts, Navy Department, Washington, will receive bids until April 3 for the following machine tools for the Portsmouth, Boston, Newport, New York, League Island, Washington and Guantanamo navy yards: Schedule 390, belt driven shaper, concrete mixer; schedule 400, condenser circulating pump, locomotive gantry crane; schedule 401, engine lathe; schedule 402, cutting off machine, turbine engine.

The following bids were opened February 27 for supplies for the navy yards:

Bidder 1, American Well Works, Aurora, Ill.; 6, Austin Mfg. Company, Chicago, Ill.; 27, George F. Blake Mfg. Company, New York; 32, F. S. Banks & Co., New York; 49, M. T. Davidson, Brooklyn, N. Y.; 52, Drew Machinery Agency, Manchester, N. H.; 60, Fairbanks Company, New Orleans, La.; 67, A. D. Granger Company, New York; 74, Handlan-Buck Mfg. Company, St. Louis, Mo.; 105, Manhattan Supply Company, New York; 110, Motley, Green & Co., New York; 123, Oil Well Supply Company, Pittsburgh, Pa.; 169, George C. Thomas, New York; 174, Vermilye & Power, New York; 180, Warren Steam Pump Company, New York; 181, Woodward, Wight & Co., Limited, New Orleans, La.; 193, Allen Bruce Blakemore, New Orleans, La.

Schedule No. 355.

Class 13. One 12-inch rotary well boring machine and one heavy link motion reversible drilling engine—Bidder 1, \$645; 6, \$915; 52, \$704; 110, \$828; 123, \$825; 193, \$900.

Class 14. One 40 horse-power portable water bottom locomotive boiler on skids—Bidder 1, \$512.50; 6, \$625; 32, \$565; 52, \$655; 67, \$531; 74, \$410; 123, \$590; 169, \$712.60; 193, \$575.

Class 15. Two duplex steam pumps, with bronze piston rods—Bidder 1, \$399.12; 6, \$210; 27, \$365; 49, \$640; 52, \$392; 60, \$360; 74, \$375; 105, \$494; 123, \$470; 174, \$490; 180, \$627; 181, \$440; 193, \$358 and \$530.

Under bids opened February 20 for supplies for the navy yards the George F. Blake Mfg. Company, New York, has been awarded class 86, two duplex feed pumps, \$108.

January Iron and Steel Exports and Imports.

The new year made a good start in exports of iron and steel. Taking the commodities for which quantities are given, it is found that the exports of January, 1905, were almost doubled in January of this year, the figures being respectively 56,810 and 109,506 gross tons. Included in the quantity figures for January of this year are pipes and fittings, which are given for the first time. These figures will be regularly stated hereafter in the reports of the Bureau of Statistics of the Department of Commerce and Labor. They will make quite an addition to the quantities heretofore specified, as the figures for January alone were 13,444 gross tons. The following table shows the exports of this class of commodities for the month of January this year and last year as well as for the seven months ending with January:

Exports of Iron and Steel.

Commodities.	January.		Seven months.	
	1906.	1905.	1906.	1905.
	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron.....	4,787	10,458	24,349	37,770
Scrap	2,809	471	6,793	16,139
Bar iron.....	4,500	3,822	18,400	18,011
Wire rods.....	99	2	3,273	12,400
Steel bars.....	2,290	1,427	10,651	14,110
Billets, ingots, blooms.....	18,814	8,981	162,453	151,137
Hoop, band, scroll... ..	798	286	3,797	1,887
Iron rails.....	.....	.....	.....	27
Steel rails.....	31,634	12,232	197,731	292,735
Iron sheets and plates ..	747	285	5,525	2,610
Steel sheets and plates ..	5,863	2,874	39,423	40,332
Tin plates and terne plates	792	587	2,877	4,991
Structural iron and steel	6,580	3,780	50,797	38,091
Wire	10,555	8,308	86,132	67,467
Cut nails.....	750	394	4,120	4,975
Wire nails.....	4,519	2,513	21,326	20,478
All other nails, including tacks.....	465	390	2,420	2,064
*Pipes and fittings.....	13,444	.....	82,061	.....
Totals	109,506	56,810	722,128	725,227

* Quantity not stated prior to July 1, 1905.

The total value of all exports of iron and steel, excluding ore, in January was \$12,980,736, against \$7,818,489 in January, 1905. The total value for the seven months ending with January was \$88,739,955, against \$76,377,558 for the corresponding period in the previous year.

The imports likewise show a decided gain as compared with the previous year. Taking the commodities for which quantities are given, the total for January was 46,516 gross tons, against 24,338 tons in January of last year. The total for the seven months ending with January was 287,007 gross tons, against 136,172 tons in the corresponding period of the previous year. The following table shows the imports of iron and steel in the lines for which quantities are given in January of this year and

last year as well as for the seven months ending with January:

Commodities.	January.		Seven months.	
	1906.	1905.	1906.	1905.
	Gross tons.	Gross tons.	Gross tons.	Gross tons.
Pig iron.....	25,657	8,804	150,634	44,292
Scrap	3,427	1,370	19,389	6,251
Bar iron.....	4,592	1,739	26,127	12,649
Rails	521	667	8,103	7,996
Hoop, band and scroll.	438	395	4,459	1,562
Billets, slabs, bars, &c., steel in forms, n.e.s.	2,446	1,363	11,481	5,557
Sheets and plates....	145	202	1,414	1,243
Tin plates andterne plates	3,200	7,910	32,913	43,788
Wire rods.....	1,658	1,430	11,217	8,655
Wire, and articles made from.....	393	326	2,258	2,063
Structural iron and steel	3,978	81	18,726	1,839
Chains	42	46	166	190
Anvils	19	5	120	87
Totals	46,516	24,338	287,007	136,172

The total value of all the imports of iron and steel, excluding ore, in January was \$2,425,017, against \$2,111,058 in January, 1905. The total for the seven months ending with January was \$15,845,909, against \$12,640,831 in the corresponding period of the previous year. In the month of January the imports of iron ore were 97,617 gross tons and the exports were 3338 tons.

Mexican Trade Notes.

The Demand for Heating Stoves.

DURANGO, February 28, 1906.—General conditions of business continue to be satisfactory. The advent of spring is marked by activity everywhere in the industrial world of Mexico. Trade throughout the winter has been brisk, especially among dealers in hardware and heating stoves. The stocks of gasoline heating stoves in the cities of the northern part of the Republic, as well as in the capital, have been almost entirely disposed of, the excessively cold weather having created an unprecedented demand for modern house heating apparatus.

Reports from the City of Mexico early in the month reflected a condition bordering on the humorous, the factor of levity, however, being sadly counterbalanced by stories not alone of physical suffering but of actual death from cold. It would appear that climatic changes are slowly but surely overcoming the prejudice which exists among the Mexican people in regard to artificial methods of house warming. Mexican *caballeros* who have been content in the past to sit in state in their luxuriously furnished houses muffled to the eyes in heavy Spanish cloaks during a cold snap are now buying oil and gasoline heaters and blessing the inventors of the contrivances. A daily journal of the capital, speaking of the demand for heating stoves during the recent cold spell, says:

The dealers in oil and gasoline stoves were kept busy, so great was the demand for these articles for heating purposes. It was impossible to purchase a heating stove on Saturday afternoon, all the dealers having disposed of their stocks. One house in the city sold as many as 36 in a single morning, which completely disposed of the stock. In other stores there was an average of about 25 to 30 a day sold from Wednesday morning, but before Saturday evening not a single stove could be had at any price. Many people had to content themselves with the little native sheet iron charcoal stoves, which generally sell for about 25 cents, but which advanced rapidly in price after Wednesday morning, until on Saturday they were selling for 50 to 60 cents each.

As suggested in previous reports manufacturers of light and attractive heaters which can be retailed at a moderate figure should keep these facts in mind and use every effort possible to induce local dealers in such specialties in the towns and cities situated in high altitudes to order adequate stocks next autumn.

Railroad Concessions and Construction.

Mexico's share of the proposed Pan-American Railroad is being actively pushed southward by the promoters, the track now being laid to a point 70 km. below the town of Tonalá. It is expected that the boundary line between Mexico and Guatemala will be reached within a year's time.

The concession granted for the construction of a line or railroad between San Marcial and Guaymas, Sonora, has been rescinded.

Industrial Notes.

The Mexican Central Railway Company has placed an order with the American Locomotive Company for 20 heavy freight locomotives of standard consolidation type and five lighter engines for yard work to meet the demands of increased traffic.

The first three months of the current fiscal year show an increase of \$159,493.41 in the value of imports into Mexico over the total for the corresponding period in the last fiscal year, the figures representing Mexico's reformed currency.

A dispatch from Guadalajara recently announced that John N. Lauth of Howard, Pa., who was for five years in charge of the iron ore mines and furnaces at Ferrería de Tula, in the State of Jalisco, has again assumed charge of the property.

The mining machinery and supply firm of Van Voorhis & Sanford, Monterey, N. L., has been succeeded by a corporation with the style of Sanford y Cia., Mr. Van Voorhis having retired from active participation in the business, though retaining an interest. J. B. Sanford is president, C. G. Poore secretary and treasurer and Thomas O. Mudd sales manager of the new organization.

The press of the capital circulates a report to the effect that there is a probability that a blast furnace will be built at a point near Salome Botello, in the State of Coahuila, where there are extensive iron ore bodies, and that a mining engineer named Luis Perez is engaged in promoting the organization of a company to carry out the project.

A company has been formed in Durango to build and operate a foundry and machine shop, the promoters believing the present to be an especially favorable time for the venture, in view of the shutting down of the Cerro Mercado iron plant. It is capitalized at \$50,000, Mexican, and will be known as the Durango Foundry & Machine Company. E. Williams is president, Rankin Johnson vice-president, D. S. Anthony manager, J. G. Witherbee superintendent. The president is a local mining manager, Mr. Johnson an employee of the railroad merger system, and Mr. Witherbee was for many years in charge of the blast furnace of the local iron works.

The Mexican International Railway Company is said to be about to place orders in the United States for a large number of freight cars to move its coal traffic.

The Monterey Foundry & Mfg. Company at a recent meeting elected as president I. Winfield, who purchased the interest of R. E. L. Meehan, retired. Mr. Winfield intends to make a specialty of the manufacture of a newly patented automatic fiber separator, for which large orders are in hand.

The Isaac Joseph Iron Company, Chicago, has opened an office in the Mutual Building in the City of Mexico, H. R. and George Wright being in charge.

There has been active speculation of late in the shares of the Monterey Iron & Steel Company, which under heavy buying have advanced considerably. The reason for this movement is said to be the existence of "a combination to buy up all the outstanding stock and to reorganize the company with double the present capital of \$10,000,000, Mexican." The journal which gives this explanation adds: "The object of the alleged combination is said to be the production of rails, so as to avoid importation, and also of beams for construction of buildings."

It is reported that the Pacific Iron Company has taken up a large body of iron ore lands in the State of Michoacan.

The United States Court at Pittsburgh has handed down a decision in the case of Robert Munroe against the Erie City Iron Works, involving two patents for manhole covers used in boilers. In one patent invalidity of the patent was urged by the defense because the principles had been used in other articles. Judge Buffington decided the patent valid because the elements, although old, had now been combined in a way and for a use that is novel. The other patent, which was an improvement upon the first, he found had not been infringed. The cost was divided.

The New Trademark Bill.

WASHINGTON, D. C., March 6, 1906.—The House Committee on Patents within a few days will report with a favorable recommendation a bill providing for the amendment of the trademark law which went into force April 1 last, but which in practical operation has developed defects which it is now proposed to remedy. The subject has been under consideration in the committee for several weeks and a number of patent and trademark experts, as well as officials of the Patent Office, have been heard, with the result that Chairman Currier has prepared a bill which will be reported to the House at an early date.

To Amend New Law.

Early in the session Mr. Currier introduced a bill described in this correspondence at the time. It extended trademark protection to foreigners having "an industrial or commercial establishment in the United States"; obviated the necessity of filing a description of a trademark with the fac-simile thereof; limited the damages to be recovered by parties failing to give notice of the registration of their marks; provided for the extension of applications filed under the old law; authorized the Government of the United States to become a party to the international agreement concerning the registration of trademarks concluded at Madrid, April 14, 1891, and provided for the establishment by the Commissioner of Patents of a classification of merchandise. This bill has been very carefully examined by the Patent Office officials and by many trademark owners and attorneys making a specialty of the registration of trademarks and, while the committee has taken it as the basis of the bill to be reported, certain provisions have been entirely eliminated and others materially amended.

The vexatious requirement of the present law, that the applicant for a trademark, in addition to submitting a fac-simile of the mark itself, shall undertake to describe it in detail, is eliminated by the first section of Mr. Currier's new bill, which provides for the amendment of section 1 of the existing law regarding applications, as follows:

First, by filing in the Patent Office an application therefor in writing, addressed to the Commissioner of Patents, signed by the applicant, specifying his name, domicile, location and citizenship; the class of merchandise and the particular description of goods comprised in such class to which the trademark is appropriated; a description of the trademark itself, if required by the Commissioner of Patents or desired by the applicant, and a statement of the mode in which the same is applied and affixed to goods and the length of time during which the trademark has been used. With this statement shall be filed a drawing of the trademark, signed by the applicant or his attorney, and such number of specimens of the trademark as actually used as may be required by the Commissioner of Patents. Second, by paying into the Treasury of the United States the sum of \$10 and otherwise complying with the requirements of this act and such regulations as may be prescribed by the Commissioner of Patents.

Pending Cases.

One of the principal controversies that have arisen with regard to the scope and meaning of the new statute relates to the status of applications made prior to April 1, 1905, which were pending when the new law went into force. In an important decision the Commissioner of Patents has held that if an application filed under the old law was rejected before the new law went into force it could not be revived by an amendment without the payment of an additional fee. To meet this decision section 2 of the new bill provides as follows:

Section 2. That all applications for registration of trademarks filed in the Patent Office before the 1st day of April, 1905, on which the fee of \$25 required by the act of Congress approved March 3, 1881, had been paid, and on which certificate of registration had not issued prior to said 1st day of April, 1905, shall be deemed to have been pending at that date within the meaning and for the purposes of sections 14 and 24 of the act entitled "An Act to Authorize the Registration of Trademarks in Commerce with Foreign Nations or Among the Several States or with Indian Tribes and to Protect the Same," approved February 20, 1905.

A decision of the Commissioner of Patents, recently made under the new law, requires a separate registration for each class of goods of "different descriptive properties," and in the practical application of this ruling manufacturers have been required to make many

registrations, each time paying a separate fee to protect goods which, though differing in appearance and use, are regarded commercially as belonging to a single class. In the hearings on this bill the fact was brought out that the Collins Company, Collinsville, Conn., manufacturer of hardware and agricultural implements, had been obliged to make 11 separate registrations in order to secure protection for its trademark employed on the following goods: 1. Axes, hatchets, adzes; 2. machetes, turcados, swords, knives; 3. mill picks, picks, pickaxes, barras, mattocks; 4. bush hooks, jincolas, sickles; 5. lanzas, lin-citas, arpones; 6. augers, boring bits, drills; 7. saws, chisels; 8. wedges, shoes, dies; 9. crowbars, shovels, spades, palas, tarpalas, cavadores, barretones, hoes; 10. sledges, hammers; 11. wrenches.

Classification of Merchandise.

Other manufacturers have found the application of the commissioner's decision even more drastic, and it is stated that some large concerns have abandoned the effort to protect their goods by trademark registration in the Patent Office and are relying solely on their rights under the common law. To meet this situation the committee has approved a provision requiring the Commissioner of Patents to establish classes of merchandise and permitting the protection of an entire class by a single registration. This section of the new bill is as follows:

Section 3. That the Commissioner of Patents shall establish classes of merchandise for the purpose of trademark registration and shall determine the particular description of goods comprised in each class. On a single application for registration of a trademark the trademark may be registered at the option of the applicant for any or all goods upon which the mark has actually been used comprised in a single class of merchandise, provided the particular description of goods be stated.

In the bill originally introduced early in the present session Mr. Currier provided that foreigners "having an industrial or commercial establishment" in the United States might secure the same protection for their trademarks as citizens of the United States, but in the course of the hearings on the bill the vagueness of the terms of this section was pointed out. It was urged that while an individual or firm actually engaged in manufacturing a product in this country deserved protection, it did not follow that the location here of a "commercial establishment," which might be merely an office for the sale of foreign goods, carried with it any equities. This view of the case subsequently prevailed, and it was decided to strike out the clause "or shall have an industrial or commercial establishment within such territory" and insert in lieu thereof "who shall have a manufacturing establishment within the territory of the United States." The section of the new bill providing this amendment reads as follows:

Section 4. That any owner of a trademark who shall have a manufacturing establishment within the territory of the United States shall be accorded, so far as the registration and protection of trademarks used on the products of such establishment are concerned, the same rights and privileges that are accorded to owners of trademarks domiciled within the territory of the United States by the act entitled "An Act to Authorize the Registration of Trademarks Used in Commerce with Foreign Nations or Among the Several States or with Indian Tribes and to Protect the Same," approved February 20, 1905.

Section 5 of the new Currier bill provides that it shall take effect on its passage. The Patent Committee hopes to secure the passage of this bill before April 1, in order that it may be considered and passed by the Senate before the end of the present session.

Opposition to Creation of Criminal Offenses.

The committee has given much attention to the pending bill, heretofore described in this correspondence, making it a criminal offense willfully to infringe a trademark, but after thorough investigation it has been decided that the opposition to the creation of additional criminal offenses against the Federal laws is likely to prove so great in the House that such a bill would be defeated. The principle involved in the measure is strongly approved by the majority of the committee, but it is not believed to be practicable at this time to pass such a law. W. L. C.

Purchases are about to be made for the equipment for the blast furnaces of the new Indiana steel plant of the United States Steel Corporation.

Early Lake Ore Shipments Wanted.

DULUTH, MINN., March 3, 1906.—The fact is evident that numerous consumers of iron ore are getting nervous as to supplies ample to maintain their blasts till navigation is well on. Railroad managers for lines reaching the head of the lake from the Mesaba range have begun to receive inquiry from these consumers as to dates of beginning shipment, and have been requested to state whether they would be able to deliver ore at Duluth if vessels could be here to receive it April 1. To such inquiries the head of the lake men have replied that they would undertake the delivery of ore at docks immediately if ships could be on hand, and that any time the vessels were ready to deliver any quantity of ore they would be. It is very certain that the season will start off with a rush and that May, possibly even the latter half of April, will be moving ore at the full midseason rate.

Railroad Improvements.

Railroads have their preparations well in hand, though none of the new docks will be prepared for shipment as early as hoped. Trackage arrangements at mines and at terminals have been made more and more elaborate and great changes have been carried along the present season, and now the roads have a layout that will permit rapid handling of the enormous traffic they will be called on to move. The Great Northern and the Duluth, Missabe & Northern railroads have arranged what may be called semiterminal systems near the Hibbing mines, the one at Kelly Lake, the other at Mitchell, and these will give ample side track room for storage of cars and the rearrangement of trains. The Duluth & Iron Range Railroad has built very large yards at Fayal and Adams mines, from which the greater portion of its Mesaba range tonnage is derived. These mines will make a vast output during the present year. The Fayal has its No. 4 shaft and surrounding ground in readiness, and its new great pit to the south of previous mine operations is in such shape that its product from there is limited only by the demands that may be placed on it. Adams too is prepared to mine on a more extensive scale than ever, with its many shafts, its open pit for milling and its additional equipment.

The Great Northern and Duluth, Missabe & Northern railroads have their terminals at the lake end of the lines, some distance from their docks and run to docks with switch engines. The Missabe road has just let an important dredging contract for the cutting of a channel clear across the harbor of Duluth-Superior, from the face of its docks to the coal receiving docks of Superior, so that ships can have two ways of making entry, which will greatly facilitate the handling of big ships in the narrow entry to this pier system. Work on this channel is to commence as soon as the ice is out and to be pushed with several dredges. The erection of upper timber work on new ore piers of both these roads has begun, and the foundations of both are nearly complete. Contractors are much impeded by the lack of Western timber, which is coming east far too slowly for them. This winter more than 40,000,000 feet of this Pacific Coast timber—fir, spruce and pine—has been consumed at the head of Lake Superior in ore piers and other construction, and the roads from the West have been unable to bring it as rapidly as needed.

At Marquette the new pier of the Duluth, South Shore & Atlantic Railroad is far along and the superstructure is framing up, while at Escanaba the work on the big new pier of the Chicago, Milwaukee & St. Paul Railroad is progressing very well. This dock was started earlier and timber is about all on hand with which to complete it. Dock and terminal improvements for iron ore roads, now in process of construction, and not including the new west Mesaba line of the Duluth, Missabe & Northern, will cost about \$4,000,000.

A railroad line is under construction from Mesaba station on the Duluth & Iron Range Railroad northeast to the Mayas mine, in section 15-59-14, and from the Mayas to the Mallman, in section 12, the entire length of the line being 5 miles. These two mines contain, so far as explored, about 500,000 tons of good ore, easily mined.

This line will reach the edge of 60-12, where G. A. St. Clair is beginning work, having purchased the lands of the old Mesaba Iron Company. There may be a few small ore deposits opened along the new line, but that township has been explored quite thoroughly and nothing of importance has been found yet.

Menominee Range Activity.

On the Menominee range many of the mines are making considerable improvements in view of an increased production for 1906. The betterments of the Corrigan mines have been referred to in this correspondence in past weeks. The Antoine Ore Company is to make extensive betterments, among them a new shaft a short distance from the present one, which is close to ore and will be abandoned forthwith. A large and improved hoist is to be installed there. These, with new buildings, a large crusher and enlarged boiler capacity, will give the mine an output this year of at least 200,000 tons, possibly considerably more. The Bristol mine, which is under the supervision of E. W. Hopkins, who has charge also of the Antoine, is making many improvements and its capacity is to be greatly increased. There will be a new engine house covering a new first motion double drum hoist and a 20-drill Norwalk compressor. The hoist will lift a 6-ton load at the rate of 1500 feet per minute. An additional lift of 80 feet has just been given the shaft and a large amount of new ground has been opened. The company is to erect a number of dwellings for employees and will let the contract for these at once. This mine, which made an output of about 210,000 tons in 1905, will probably increase to at least 300,000 tons for the present year. The new steel lined Ludington shaft of the Chapin, 200 feet deep, has been bottomed and will be fitted with permanent machinery at once. The old Chapin Cornish pump, weighing 900 tons and used years ago in the Ludington, will be placed in the shaft. All foundations for the pump have been finished and the house is completed. This pump is good for at least 3000 gallons a minute from the 2000-foot level, which is a duty that is not equaled in the entire Lake Superior iron ore region.

The Buffalo & Susquehanna Iron Company, of which Rogers, Brown & Co. are leading stockholders, has secured large tracts of ore lands in Iron County, Menominee range, and will explore on a considerable scale. These are the lands that had been supposed to have gone to the Cleveland Cliffs Iron Company. At the Hiawatha mine, which has been taken by the same company, unwatering is in progress and this is proving a job of considerable difficulty, as the mine has workings larger than is generally supposed. It has three levels and all have considerable openings. In addition the shaft is too small to permit the lowering of large pumps and the timbering is in bad shape. Just now about 1200 gallons are coming out per minute, and it is hoped to have the mine unwatered before April 1. When this has been done the entire shaft will be retimbered and sunk to the fourth level, where crosscutting and drifting will be pushed. West of the mine diamond drilling is under way with the idea of finding the ore body.

Oglebay, Norton & Co. are exploring the Selden 40 near Stambaugh and are pushing work on the old Stambaugh and the St. Clair, on which they are sinking shafts.

Copper Notes.

The statement has been made that the new electrical equipment at the Calumet and Hecla mine, Houghton, Mich., had been started up and is now running. It will not be in operation for some time and probably it will be six or eight weeks until the important portions of the new plant are running. One of the four generators at the Lake Linden power station was turned over this week and will work along steadily, running lights, a pump or two and some other preliminary machinery. This generator is of 2500 horse-power. Crushers have not yet been installed in the rock houses, nor has a part of the other machinery been set up. When complete this will be the most elaborate and interesting mine power installation yet placed in service.

The various A. P. Heinze properties in Butte, Mont., aside from Lexington, are now operated by the new Cole-Ryan Company, and the production of ore is slightly in-

creased already. The February production of these mines was 3,009,000 pounds. It is a remarkable thing that the North Butte, which was an insignificant producer until Mr. Cole and associates bought it, last April, is now third in the camp. The February production of the leading Butte companies was as follows:

	Pounds.
Boston & Montana (Amalgamated).....	7,387,000
Anaconda (majority Amalgamated).....	6,764,000
North Butte.....	4,398,000
United Copper (now Butte Coalition).....	3,009,000
W. A. Clark's mines.....	2,429,000

The total product of the camp, including 17,733,000 pounds by mines owned wholly or in majority part by the Amalgamated, was 28,720,000 pounds. There were mined during the month 378,700 tons of rock, which made the average production of the camp at the rate of 70 pounds, or $3\frac{1}{2}$ per cent. of copper. North Butte, on the other hand, mined a rock with an average copper content of 8 per cent. Eliminating this rich ore the average of the Butte camp is running about 3.4 per cent. D. E. W.

The S. Keighley Metal Ceiling & Mfg. Company.

This company, now located at Pittsburgh, manufacturer of metal ceilings and metal window frames and sashes, has completed plans for a new plant to be located at Follansbee, W. Va., on the Wheeling division of the Pan Handle Railroad, 47 miles west of Pittsburgh. It recently purchased three acres of land at that place and will build a plant consisting of one-story buildings of steel construction and fireproof throughout. The general shop will be 125 x 160 feet, fitted with modern machinery, including a 5-ton Northern Engineering Works crane for conveying material through the shops. The warehouse and storerooms will be under one roof, a building 35 x 160 feet in size. The pattern shop and pattern storage warehouse and paintroom will be located in separate buildings, and the power plant will also be located in a separate building. Motive power will be furnished by two 60 horse-power Mertes gas engines. Additional shipping facilities will be furnished by the Wabash Railroad, which crosses the Ohio River a short distance from Follansbee, a spur track connecting that place with the main line.

Among orders recently booked by the company is a contract for furnishing the metal window frames and sashes for the American Storage Company's works in Allegheny; a contract for the metal ceilings in the new Goettman Building on Penn avenue, Pittsburgh; the metal ceilings in the Twenty-second Ward engine house and the sheet metal work on the Duquesne freight station, Pittsburgh. The company expects to remove to its new plant about May 1, retaining an office and warehouse at its present location in Pittsburgh.

Two turbine steamers now under construction in the Roach shipyard, Chester, Pa., for the Metropolitan Steamship Company, are to have channel framing, with the channels split at the turn of the bilge, the two portions forming respectively the frame and reverse frame along the edges of the floor plates. This form of construction was adopted in the Great Northern steamers Minnesota and Dakota, which are the largest ships yet built in America; in the Shawmut and Tremont, of the Boston Steamship Company's Pacific service, and in the steamers constructed by the Maryland Steel Company for the Atlantic Transport Company. It has much to commend it in the way of simplicity, while retaining all necessary strength and has been recognized by Lloyd's, the British Corporation and the United States Standard Register.

Work is steadily proceeding on the Suez Canal with the idea of providing for a uniform depth of 31 feet. The navigable dimensions are now practically double what they were 20 years ago. In the southern section the bottom width is to be further increased from the present 102 feet to 128 feet. The curves are also being improved and a large station constructed in the small Bitter Lake. The water level width of the canal in the northern half is from 300 to 360 feet and in the southern half from 240 to 300 feet.

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HARDWARE

IT has been a subject of general remark during the past year that more than once the restraining influence of the great industrial corporations has been exercised in preventing a runaway market in Iron and Steel. Many a time the manufacturers could have obtained from \$5 to \$10 per ton more for their products than they asked, yet with far-seeing ken they pursued a conservative course, to the manifest good of the entire business community. In adopting this course they refused to follow the example so frequently set them by Hardware manufacturers, who, when a combination or pool is formed, have often seemed incapable of resisting the temptation to advance prices inordinately, with the result that the favorable conditions are short lived and the inevitable and mischievous reaction sets in. There are, however, on the other hand, examples of many Hardware manufacturers and of some associations or combinations who have shown a commendable self-control in keeping prices down to a reasonable level when the condition of the market was such that they could easily have obtained materially more for their goods.

One of the practical problems before business men is in regard to laying responsibility upon their subordinates, putting men who seem to possess the requisite qualifications in charge of some department or of some special line of work. There is no doubt that this is in many cases one of the secrets of success in business. It requires something of an effort to assign to others the performance or the oversight of work which the merchant or manufacturer has been in the habit of attending to himself. It is often easier to continue in the old way even though it be to find one's best energies taken up with a multitude of details and with varied responsibilities, which, with the extension of trade and broadening of relations, it is difficult adequately to discharge. This necessity for the laying off or subdividing of responsibilities certainly exists in many a mercantile house. The wise merchant will call others to his aid in the carrying on of the business and will turn over to them departments or duties in one form or another which will relieve him and tend to elicit their best energies. The result should be advantageous to the business in many ways.

While there is on the one hand a dislike to intrust with special responsibilities those who are untried and comparatively inexperienced, there is fortunately in human nature a subtle instinct which recognizes the sense of responsibility and rises equal to it. The committing of important interests to the care of a man, if it is not the means of developing signal abilities, the presence of which was unsuspected, frequently arouses a new and intelligent interest in the work and leads him to take hold of its problems with new enthusiasm and success. While his experience may be limited in the discharge of the special responsibilities laid upon him, there is with one who has the right stuff in him a rising to the occasion and justifying the trust reposed in him.

Condition of Trade.

Whatever may have been the experience of manufacturers during the past month as regards the volume of current business, there is no doubt that with many and probably most jobbing houses it was characterized by a

most satisfactory trade, in many instances indeed making a new record for February. Jobbers generally refer to the orders which are coming into them as covering a large variety of goods and practically all lines which find sale during the spring and summer months. Among these Agricultural Tools and seasonable specialties generally, House Furnishing Goods, Mechanics' Tools and the whole line of Building Supplies are to be noted. There is, too, a liberal movement of material and of heavy goods in general in which indeed in some branches of the trade there is something of a scarcity. With the manufacturers there has not perhaps been as marked receipt of orders owing to the fact that the jobbers bought liberally several months ago and have their warehouses well stocked in preparation for the season's trade. Their business, however, is so good that replenishing orders are going in frequently to the manufacturers. The disposition among the jobbing trade seems to be to purchase freely for the business of the next few months, but there is little of speculative buying in anticipation of advances. So far as fall business is concerned, while a decidedly hopeful feeling prevails it is not deemed necessary to buy in the expectation that goods will be either higher or hard to get. This does not indicate any coming down from the confident expectations with which the year opened, all the indications pointing to a continuance of good times, especially if the crops should be reasonably large. Meantime the tone of the market is decidedly firm and in some cases strong, there being only a few lines in which there is something of a demoralized condition so far as prices are concerned. In this connection Axes and Tire and Stove Bolts will naturally occur to our readers. This irregularity is the more notable because of the increased cost in the production of the goods in question and the generally firm and hopeful tone of the market.

Chicago.

The market shows no price changes of importance from week to week and with raw material practically at a standstill no radical changes are anticipated in the near future. The demand for all classes of Hardware continues practically unabated and large Western jobbers report the last month the biggest February in their history. This is the more unusual on account of the fact that the second month of the year is usually very quiet, and with retailers largely engaged in convention work little time is given over to replenishing stocks. Wire Cloth manufacturers are literally swamped with business, but prices to large distributors remain unchanged and continue on the lower basis made last fall at the Washington meeting. Several jobbers, however, have made slight advances, believing that the output will be insufficient to meet this year's demand. The present era of prosperity has called into being many new plants designed for the manufacture of Hardware specialties throughout the West and Northwest. Most of the new companies are producing the lighter lines and smaller specialties, no large concerns of importance having been incorporated to manufacture heavy Hardware. Western jobbers are likewise increasing their facilities by the erection of new warehouses and extensions to existing buildings, and the present growth of the trade in this territory is undoubtedly without parallel. For such seasonable goods as Lawn Mowers, Ice Cream Freezers, Garden Tools, &c., the jobbers are experiencing a tremendous demand, and they have been in receipt of an avalanche of orders in the last ten days, this following the comparatively light demand that prevailed during the earlier weeks of last month. The distribution of Wire Nails and Fencing is greater

than ever before at this season and from present indications there will be no congestion at either the mills or in the movement of jobbers' stocks, which is customary during the spring months. Financial conditions could not possibly be improved and both manufacturers and jobbers report that collections are excellent and that accounts almost without exception are being promptly liquidated.

NOTES ON PRICES.

Wire Nails.—Market conditions are unchanged and the mills continue to receive specifications on contract orders in large volume. In fact the mills are behind on shipments. A fair volume of new business is also coming to the mills. Mills purchasing their raw material are favorably inclined toward an advance in the price of Nails, while the larger interests seem content with the present status. Prices are firm and quotations are as follows, f.o.b. Pittsburgh, plus actual freight to point of delivery, 60 days, or 2 per cent. discount for cash in 10 days:

Carloads to jobbers.....	\$1.85
Carload lots to retail merchants.....	1.90

New York.—The demand for small lots from store is moderate and somewhat spasmodic. It is reported that the advance in price made by the jobbers is being maintained. Small lots from store are quoted on the basis of \$2.15 per keg.

Chicago.—The output of the mills of the American Steel & Wire Company last month broke all records for February, and notwithstanding the heavy shipments deliveries cannot be made in sufficient time to meet the demands of the large distributors. New tonnage in Nails is very satisfactory and specifications still greatly exceed shipments. No change in prices has yet been made, nor is one being considered, although an advance would meet the views of many of the manufacturers who are compelled to pay high prices for raw material. Quotations are unusually well maintained and are unchanged, as follows: \$2 in car lots to jobbers and \$2.05 in car lots to retailers, with an advance of 5 cents for less than car lots from mills.

Pittsburgh.—New business in Wire Nails is of fair volume, but the mills are running mostly on contracts, specifications on which are being received very freely. Shipments by the mills are enormously heavy and some of the leading Wire Nail interests are very much behind in deliveries. It is possible an advance in prices of Wire Nails may be made this month, but is not regarded as a probability, as some of the larger interests are opposed to any advance at this time. The tone of the market is firm, as follows: Wire Nails, \$1.85 in carloads to the large jobbing trade and \$1.90 in carloads to retail merchants, f.o.b. Pittsburgh, plus actual freight to point of delivery, terms 60 days, less 2 per cent. off for cash in 10 days.

Cut Nails.—No change was made in the price of Nails by the Cut Nail Association, which held a meeting last week. Current demand is light and the mills are largely engaged in filling specifications on contract orders. It is understood that prices are maintained. Quotations are as follows: \$1.80, base, for carload lots, f.o.b. Pittsburgh; \$1.85 for less than carloads, f.o.b. Pittsburgh; \$1.95 for carload lots, on dock, New York; \$2 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

New York.—There is comparatively little doing in the local market, but it is understood that the advance in price made by the jobbers is being adhered to. Quotations are on the basis of \$2.05 per keg.

Chicago.—At the meeting of the Cut Nail Association held in Philadelphia prevailing prices were reaffirmed. Western distributors report an increased demand and present consumption is greatly in excess of that in former years. Quotations are well maintained and are unchanged, as follows: Steel Cut Nails in car lots, \$1.95; less than car lots, \$2; Iron Cut Nails, \$2.05 in car lots; less than car lots, \$2.10.

Pittsburgh.—No change in prices was made at the meeting of the Cut Nail Association, held in Philadelphia February 28. The mills report a light demand and are running mostly on contracts, specifications for which are being received in good volume. We are advised that prices are firm, as follows: \$1.80, base, for carload lots, f.o.b. Pittsburgh; \$1.85 for less than carloads, f.o.b. Pittsburgh; \$1.95 for carload lots, on dock, New York; \$2 for less than carloads, on dock, New York. Iron Cut Nails at points west of Buffalo and Pittsburgh are held at 5 to 10 cents advance on Steel Cut Nails.

Barb Wire.—February shipments by the mills were very heavy, but present business is comparatively light. Prices are alluded to as being firm. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

	Painted.	Galv.
Jobbers, carload lots.....	\$2.00	\$2.30
Retailers, carload lots.....	2.05	2.35
Retailers, less than carload lots.....	2.15	2.45

Chicago.—The growth of the Woven Wire industry has not affected the demand for Barb Wire, which shows a healthy increase from year to year. The distribution is relatively on a par with that of Woven Fencing, and stocks are very small. Quotations are firm and unchanged, as follows: To jobbers, Chicago, car lots, Painted, \$2.15; Galvanized, \$2.45. To retailers, car lots, Painted, \$2.20; Galvanized, \$2.50. Retailers, less than car lots, Painted, \$2.30; Galvanized, \$2.60. Staples, Bright, in car lots, to jobbers, \$2.10; Galvanized, \$2.40; car lots, to retailers, 10 cents extra, with an additional 5 cents for less than car lots.

Pittsburgh.—While new tonnage is rather light the large trade is specifying freely on contracts, and shipments by the mills in February were very heavy. It is said that stocks of Wire sold by the mills at this time are very much lighter than usual at this season of the year. There is still some trouble in getting prompt deliveries of Steel, which interfere to some extent with operation of the mills. Prices are reported as being firmly held, as follows: Painted, Barb Wire, \$2, and Galvanized, \$2.30, in carload lots to the large jobbing trade, with the usual advance of \$1 a ton to retailers in carload lots, f.o.b. Pittsburgh, 60 days, or 2 per cent. off for cash in 10 days.

Smooth Fence Wire.—While new business is light specifications on contract orders are being received by the mills in volume beyond their ability to keep abreast with shipments. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.70
Retailers, carloads.....	1.75

The foregoing prices are for base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances, as follows:

	6 to 9	10	11	12	12½	13	14	15	16
Annealed.....Base	\$0.05	.10	.15	.25	.35	.45	.55		
Galvanized....	\$0.30	.35	.40	.45	.55	.65	1.05	1.15	

Chicago.—Independent Fence manufacturers not operating their own Wire mills are anticipating deliveries, which indicates the tremendous demand for Fencing now prevailing. New business, however, is very light, as practically all of the material now being shipped is on contracts placed last fall. Quotations are firmly maintained, as follows: To jobbers, \$1.85, f.o.b. Chicago, in car lots, and car lots to retailers, \$1.90.

Pittsburgh.—Specifications on contracts placed some time ago are coming in at a rate that exceed the output of the mills, some of which are still very much behind in deliveries. The amount of new tonnage being placed is very light, but shipments by the mills on contracts for February were very much larger than usual for a winter month. Quotations are as follows, f.o.b. Pittsburgh, 60 days, or 2 per cent. discount for cash in 10 days:

Jobbers, carloads.....	\$1.70
Retailers, carloads.....	1.75

The above prices are for base numbers, 6 to 9.

Rope.—Manufacturers report demand in excess of the same period last month, and that inquiries are numerous. The prospect for an increase in business later in the season is regarded as encouraging. The demand for Jute

products is particularly good at this time. Prices are fairly well maintained. Quotations are as follows: Pure Manila, 12½ cents; B quality, 11½ cents; Pure Sisal, 9½ cents; No. 2 quality, 8 cents per pound.

Window Glass.—It is reported that the American Window Glass Company has made another advance of 5 per cent., making its prices 90 and 15 per cent. discount on the first three brackets, single, and 90 and 10 per cent. discount on larger sizes. The demand for Window Glass is heavy, larger, it is estimated by some, than the country ever experienced. This condition has added to the strength of the market. New York quotations are as follows: First three brackets, single, 90 and 20 per cent. discount; all other sizes, single and double thick, 90 and 10 per cent. discount.

Linseed Oil.—A little later in the season an improved demand is anticipated, but at present inquiry is moderate. There is some State and Western Oil in second hands, purchased at lower than present prices, which is available at less than the regular market quotations. This would probably be taken up quickly if there was an active consumptive demand. Large buyers have their requirements provided for, it is understood, for some time to come. Prices remain unchanged, as follows: Out of town Raw, 42 to 43 cents; City Raw, 44 to 45 cents per gallon; Raw, Calcutta seed, 65 cents per gallon. Boiled Oil, 1 to 2 cents advance over Raw.

Spirits Turpentine.—Prices have held for the larger part of the week at former quotations, but on stronger advices from Savannah have now advanced ½ cent per gallon in the local market. Business is reported as being light. New York quotations are as follows, according to quantity: Oil Barrels, 72 to 72½ cents; Machine Made Barrels, 72½ to 73 cents per gallon.

THE AMERICAN HARDWARE CORPORATION.

WE give below a list of the officers and directors of the American Hardware Corporation, New Britain, Conn., and its constituent companies. It will be of interest as indicating in a compact form the wide and important interests represented in this great corporation and giving the names of those to whom the direction of the various constituent companies is intrusted:

The American Hardware Corporation.

Philip Corbin, president.
Charles M. Jarvis, first vice-president.
Howard S. Hart, second vice-president.
Andrew J. Sloper, treasurer.
Charles H. Parsons, assistant treasurer.
Charles E. Wetmore, secretary.
Charles B. Parsons, assistant secretary.

DIRECTORS.

Philip Corbin, Andrew Corbin, Charles M. Jarvis, Andrew J. Sloper, Charles H. Parsons, Charles Glover, Howard S. Hart, Sylvester C. Dunham, Frederick P. Wilcox, John H. Whittemore, Charles Miller, George W. Corbin.

P. & F. Corbin.

Philip Corbin, president.
Charles H. Parsons, first vice-president.
Charles E. Wetmore, second vice-president.
Charles E. Wetmore, treasurer.
Edward L. Prior, assistant treasurer.
Albert N. Abbe, secretary.
Charles B. Parsons, assistant secretary.

DIRECTORS.

Philip Corbin, Andrew Corbin, Charles H. Parsons, Charles Glover, Charles E. Wetmore, Charles M. Jarvis, A. N. Abbe.

Russell & Erwin Mfg. Company.

Howard S. Hart, president.
Benjamin A. Hawley, vice-president.
Isaac D. Russell, treasurer.
Joel H. Van Newkirk, assistant treasurer.
Theodore E. Smith, secretary.

DIRECTORS.

Andrew J. Sloper, F. L. Hungerford, Charles E. Mitchell, Howard S. Hart, Benjamin A. Hawley, Isaac D. Russell, Philip Corbin, Charles M. Jarvis, Joel H. Van Newkirk.

The Corbin Screw Corporation.

Charles Glover, president.
Clarence A. Earl, vice-president.
Theodore E. Smith, treasurer.
Theodore E. Smith, secretary.
William J. Surre, assistant secretary.

DIRECTORS.

Philip Corbin, Charles M. Jarvis, Charles Glover, Howard S.

Hart, Theodore E. Smith, Charles H. Parsons, Benjamin A. Hawley, Clarence A. Earl, Andrew Corbin.

The Corbin Motor Vehicle Corporation.

Philip Corbin, president.
Max S. Hart, vice-president.
Max S. Hart, treasurer.
Paul P. Wilcox, assistant treasurer.
Paul P. Wilcox, secretary.
J. S. Bretz, general manager.

DIRECTORS.

Philip Corbin, Charles M. Jarvis, Howard S. Hart, Charles Glover, Paul P. Wilcox, Max S. Hart, Andrew J. Sloper, Robert C. Mitchell, J. S. Bretz.

The Corbin Cabinet Lock Company.

George W. Corbin, president.
Charles M. Jarvis, vice-president.
C. H. Baldwin, treasurer.
W. H. Booth, secretary.
George L. Corbin, assistant secretary.

DIRECTORS.

Philip Corbin, Andrew Corbin, George W. Corbin, Darius Miller, Charles Glover, Charles M. Jarvis, W. H. Booth, C. H. Baldwin.

PRICE-LISTS, CIRCULARS, &c.

Manufacturers in Hardware and related lines are requested to send us duplicate copies of catalogues, price-lists, &c., one copy for our catalogue department in New York and another for our London office; and at the same time to call our attention to any new goods or additions to their lines, of which appropriate mention will be made, besides the brief reference to the catalogue or price-list in this column.

RUGG MFG. COMPANY, Greenfield, Mass.: Illustrated circulars relating to Steel Tube Bow Hay and Lawn Rakes, Hand and Drag Rakes, Framing Pins, Wheel Hoes, Tomato Vine Holders, &c.

THE WHITMAN & BARNES COMPANY, Chicago, Ill.: Machine shop booklet illustrating Twist Drills, Reamers, Wrenches, Cutters and Keys, &c.

EVART TOOL COMPANY, Evart, Mich.: Catalogue of Lumbering Tools and Handles, including a full line of Tools for logging and driving.

NATIONAL CUTLERY COMPANY, Detroit, Mich.: Catalogues relating to Axes, Butcher Knives and Scythes. A variety of patterns of each of these lines is illustrated.

J. L. CLARK MFG. COMPANY, Rockford, Ill.: Illustrated catalogue devoted to Flue Stoppers in a number of styles, Flour Sifter and Toaster.

F. E. MYERS & BRO., Ashland, Ohio: Hanger showing Adjustable Tandem Stayon Flexible Door Hanger; also circulars devoted to Stayon Flexible Covered Door Hanger, Hay Unloaders, Cushion Tire Store Ladder, &c.

W. C. HELLER & CO., Montclair, N. J.: Illustrated booklet illustrating and describing the firm's Steel Hardware Shelf Boxes. Net prices of the various sizes of Interchangeable Boxes are also given.

WILLIAMS MFG. COMPANY, Northampton, Mass.: Fifty-seventh annual catalogue illustrating Baskets for a variety of uses, made of bamboo, rattan, oak, ash and maple. All the company's Baskets, except the Diamond, its cheapest grade, are stamped with its trademark, which is referred to as standing for the highest quality.

IWAN BROS., Streator, Ill.: Illustrated catalogue of Iwan's Patent Improved Post Hole and Well Auger. This is made in sizes from 3 to 14 inches, inclusive, the larger sizes being adapted to the use of telephone, telegraph, electric light and street car companies.

I. F. FORCE HANDLE COMPANY, New Albany, Ind.: Revised price-list, under date of January 1, of Handles, including Ax, Pick, Grub Hoe, Adze, Post Maul, Sledge, Tool, Hammer and Hatchet Handles.

HERBERT J. RICHMOND has been appointed manager of the Kilbourne Mfg. Company, Troy, N. Y., and will shortly make a call on the trade. The company manufactures a large variety of Wire Goods and Hardware Specialties.

Michel Brothers Hardware & Paint Company, St. Louis, Mo., has been incorporated with a capital stock of \$10,000, fully paid up. A retail stock of Shelf Hardware, Agricultural Implements, Paints and Oils is carried.

TRADE WINNING METHODS.

This department is for the description of approved methods of carrying on and extending business, and a cordial invitation is given to merchants to co-operate in the effort to make it suggestive and of practical use to the trade.

AN ALPHABETICAL ADVERTISEMENT.

THE accompanying illustration represents the top and bottom of an advertisement occupying a full column which was used by Stewart & Bergen Company, Fort Plain, N. Y., to call attention to the fact that the company's stock comprised many articles which were worthy of the attention of buyers of Christmas gifts, although it is obvious that many of the goods might be advertised at any time. The ad. with its heavy black border alongside of a column containing local news notes was a striking and effective one and efficiently served its purpose. The full list of goods designated in the advertisement is as follows:

Axes.
Air Guns.
Bread Mixers.
Bells.
Barbers' Clippers.
Cameras.
Carving Knives and Forks.
Carving Tools.
Carpet Sweepers.
Chafing Dishes.
Crumb Tray and Brush.
Dinner Pails.
Drop Lights for Electricity or Gas.
Dog Collars.
Door Bells.
Enameled Ware.
Electric Christmas Tree Outfit.
Food Choppers.
Fishing Tackle.
Flash Lights—Pocket.
Guns.
Gas Stoves.
Hatchets, Harness.
Holders for Christmas Trees.
Irons for Ironing.
Ice Creepers.
Ingersoll Watches.
Jack Planes.
Jack Knives.
Jacks for Wagons.
Knives and Forks.
Kraut Cutters.
Lanterns.
Medicine Cabinets.
Measuring Tapes.
Match Boxes.
Mouse Traps.
Nickel Baking Dish.
Nickel Tea or Coffee Pot.
Nickel Tea Kettle.
Nut Cracks and Picks.
Oil Stones and Hones.
One Dollar Watches.
Pliers.
Portables—Gas or Electric.
Pocket Knives.
Pocket Electric Lights.
Quilt Frame Clamps.
Quart Measures.
Razors, Rifles.
Roasting Pan.
Revolvers.
Screw Drivers.
Shot Guns, Shears.
Shaving Brushes and Strops.
Skates, Sleds, Stoves.
Tools, Tool Chests.
Thermometers.
Toy Wringers.
Toy Freezers.
Urns for Coffee.
U. S. Mail Boxes.
Vises, Velocipedes.
Whips.
Wagons for Children.
Wrenches, Wringers.
X-Cut Saws.
Xmas Presents at

Buying Christmas Presents

is as simple as A B C if you read over our list and select a useful present that will give you pleasure for some time to come

Axes
Air Guns
Bread Mixers
Bells
Barbers' Clippers
Cameras
Carving Knives and Forks

Whips
Wagons for Children
Wrenches, Wringers
X-Cut Saws
Xmas Presents at
Extremely Low Prices
Yard Sticks
Yankee Bowls
Zinc Washboards
& Many More

Stewart &
Bergen Co.
Hardware

An Alphabetical Advertisement
Reduced About One-third.

Extremely Low Prices.
Yard Sticks.
Yankee Bowls.
Zinc Washboards.
& Many More.

A PROFITABLE SIDE LINE.

BY S. M. S.

BICYCLES and Bicycle Sundries to-day are a profitable line for the Hardware merchant to take up and actively push, but to make a success he must display it and take an interest in showing as well as talking up his line of Wheels. The Hardware merchant who takes up this line will find the handling of Bicycles will bring more men and therefore more prospective customers into his store. It may be only a Bicycle Wrench or a Pocket Oil Can the caller buys to-day. He may have formerly been buying what little Bicycle Sundries he needed at another store, but if he is well waited on, gets a good Bicycle Wrench or Pocket Oil Can at the right price, sees a good display of Bicycles and a well arranged and well kept Hardware store, it is only a question of time when that man will become a regular customer of the store.

Some 15 years ago Bicycles were sold almost entirely by exclusive Bicycle and Sporting goods dealers. Gradually, however, Hardware merchants have added this line to their stock, until to-day they have almost entirely driven out the old time "Bike man." Many Hardware stores now handle Bicycles. Some merchants carry a most complete assortment, and if judiciously handled they prove one of the most profitable lines.

At present prices the best Bicycles are within the reach of all, and with Bicycles again coming into public favor and the demand increasing they are proving a desirable line for the Hardwareman to handle. With those who do not find the line profitable the main trouble is usually lack of interest and salesmanship first and poor assortment and no display second.

Modern merchandizing is growing to be a science, and it is only the ones who keep abreast of the times, constantly watching out for profitable specialties, who can expect to succeed. The Bicycle is no longer a fad or a luxury, but a modern necessity, and it is up to the Hardwareman to equip himself to meet this demand. Do not expect to make 100 per cent. profit on every Wheel sold, but many of the small items classed as Bicycle Sundries will bear even more, besides increasing your general trade and decreasing the cost of getting it.

DELAWARE HARDWARE ASSOCIATION.

A MEETING was held in Dover on Friday, 2d inst., for the purpose of discussing plans for the formation of a State Hardware Association in Delaware. It was attended by a number of Hardware men from different parts of the State. John M. Elliott of Delmar, who is to be credited with the inauguration of the movement, as per the reference to the matter in *The Iron Age* a short time since, was chosen chairman, and J. B. Bice of the Dover Hardware Company of Dover was elected secretary. Those present indulged in an interesting talk concerning the need of an organization and expressed themselves as anxious to become members of the proposed association and to assist in getting the merchants of the State together for this purpose. Another meeting will be called in about two weeks, when it is hoped formally to organize an association.

WITH a view to aiding retail merchants in calling public attention to the company's well-known Bristol Steel Fishing Rods the Horton Mfg. Company, Bristol, Conn., has prepared a translucent window sign which will be furnished gratis on application. The sign is beautifully colored, and mounted on the inside of glass in store doors or windows makes an effective appeal to the interest and curiosity of the passer-by.

A VETERAN Hardware merchant is Edward B. Neal of Wiscasset, Maine. Mr. Neal established himself in the Hardware business at that point in March, 1853, on Water street, where his store is still located. He has been continuously identified with the business during this entire period.

THE Iowa Railroad Commissioners by a ruling dated 24th ult. have reduced the freight on Iron Pumps, which are now third class, instead of first class, as heretofore.

GALVANIZED NAILS.

MALLEABLE IRON FITTINGS COMPANY, Braintree, Conn., has issued a catalogue and price-list relating to zinc-coated (galvanized) refined iron and Steel Cut and Wire Nails. In view of the various opinions regarding what constitutes a properly galvanized article the company secured an expression on this point from W. T. Flanders, a recognized authority on the subject. Mr. Flanders' views occupy four pages of the catalogue, in which he reviews the failures of substitutes for galvanizing by immersing the Nails in a bath of molten zinc. He states that he has carefully watched the result obtained in using galvanized Nails for laying shingle and slate since 1882. The result of his observations is that all Nails used for these purposes, or for any ex-

posed work, should be coated with at least eight pounds of pure zinc to 100 pounds of Nails and that when so coated they will outwear the very best quality of shingles. He also asserts that slating Nails coated with ten pounds of pure zinc to 100 pounds of Nails will have a life of at least 50 years, even under the climatic conditions that prevail in territory bordering on the seacoast.

THE first annual banquet of the McKees Rocks Chamber of Commerce, McKees Rocks, Pa., was held on the 14th ult. The occasion was a notable one. Among those who made addresses were Congressmen Baughfield and Burke and J. E. Digby, president of the Chamber of Commerce, who is well known to the retail Hardware merchants of Pennsylvania, as secretary of the State association.

OHIO HARDWARE ASSOCIATION.

THE City of Canton entertained the twelfth annual convention of the Ohio Hardware Association February 27 and 28 and March 1. The word entertained is used advisedly, as the arrangements of the local merchants and manufacturers for the reception and pleasure of their visitors were made and carried out on a most liberal and extensive scale. As a meeting place the big new Auditorium was selected and the experiment was tried of combining all features of the convention

Under One Roof.

The halls and corridors were filled with the exhibits of over 125 manufacturers and jobbers, while the main audience room was used for the sessions and for the banquet. On the stage were established registration desks and the headquarters of the various officers and working committees. This arrangement, however, resulted in some confusion and interfered somewhat with the success of the formal sessions. Hearing in the meetings was rendered difficult not only by the size of the amphitheater and the other things going on inside but also by the hum and bustle in the corridors, where the exhibits were installed. These were thronged at all hours, not only by Hardware merchants, but by people of the city, old and young, drawn by the attractiveness of the displays and the distribution of souvenirs. For these reasons the meetings were not as profitable and the attendance at them was not as good as might have been desired, although President Baker and the other officers made every effort to overcome the handicap. The general attendance at the convention, however, was very gratifying to Secretary Bare and the others who had made a special effort to get out the strength of the association. There were

Nearly 600 Registered,

to say nothing of those who omitted this formality and the very large representation of manufacturers, jobbers and others not identified with the association. Naturally the hotel accommodations of Canton were severely taxed, but most of the visitors were well taken care of at the Courtland and the McKinley, two large, new and handsomely furnished houses.

Entertainment.

As stated in our telegraphic report last week the members of the association and their ladies were entertained Tuesday evening at a theater party given by Canton citizens. There was also much informal entertainment by jobbers present and by the numerous local manufacturers, who cordially invited inspection of their works.

The Banquet

was a very large affair, the tables covering the entire floor and stage of the Immense Auditorium. It was thoroughly enjoyed by all, a pleasant feature being the presence of the ladies, who were invited for the first time in the history of the association. The menu and service were of a high order. Speakers of exceptional ability had been provided, the witty address of Judge C. C. Bow of the Probate Court being especially enjoyed.

Other speakers were: W. C. Holman of *Salesmanship*, Chicago; Rev. O. B. Milligan, Canton, who made an eloquent plea for high ideals in business life, and Johnson Sherrick of the Canton Hardware Company, a veteran Hardwareman, whose kindly reminiscences were listened to with the greatest pleasure. As toastmaster President Baker was in his happiest mood. The banquet was enlivened by the music of a full military band, which was also in attendance throughout the convention.

Greetings.

A telegram was received from the Connecticut Association, in session, extending greetings to the Ohio Association and expressing satisfaction at the presence in New Haven of W. P. Bogardus. "Your loss," read the message, "is our gain." A letter was also received from National President Bogardus himself expressing regret that he could not meet with his own State association. He urged a vigorous expression in opposition to the proposed parcels post legislation.

Secretary M. L. Corey of the National sent a telegram offering best wishes for a successful convention, as did Secretary T. James Fernley of the Jobbers' Association, who urged action for 1-cent letter postage and against parcels post.

was the subject of an interesting address by W. C. Holman of Chicago, editor of *Salesmanship*. Mr. Holman did not apply his remarks specifically to the Hardware business, but spoke along general lines of the historical development of trade and the principles upon which a successful mercantile business should be conducted.

The Question Box

was in charge of a committee headed by N. C. Alton, Loran. In preparing the programme considerable time was assigned to this interesting feature. Following are some of the questions read by Mr. Alton, with abstracts of the ideas suggested by different members:

Is it a good thing to have an understanding between the merchants of a town or city on the prices of staple articles?

One member reported such an understanding on Nails, Paints, Oils, Shovels, &c. He said: "It works very successfully, binding us together to a certain extent and creating a more friendly feeling among all the Hardwaremen in our town."

Which is the most beneficial, to cater to the commercial traveler and pay his salary and expenses, or purchase direct from the wholesaler and get the benefit of his experience and visit his establishment?

It developed that there was a strong sentiment among those present in favor of purchasing through the traveling men.

Is it advisable to have persons who class themselves as jobbers members of this association?

A motion was made and carried expressing the sense

of the convention that jobbers are eligible for membership.

Is it to the welfare and interest of general Hardware merchants to abandon the old established custom of list and discounts and establish net prices on such goods as Rules, Planes, Bolts, Screws, &c.?

Many members expressed themselves in favor of list and discounts.

Does a tin shop and roofing business in connection with a Hardware store help the Hardware trade? Does it not belong to the Hardware trade?

There was considerable discussion of this question, the general feeling being that it should be answered strongly in the affirmative. Several members gave their experience in support of the proposition.

What is the best way to mark selling price on goods, in characters or plain figures?

A call for vote resulted in favor of plain figures by a large majority.

Is it advisable for a merchant to borrow money sufficient to enable him to discount all bills?

Different opinions were expressed. One said that he had always conducted his business without borrowing and had made an enviable reputation in that way. Another said the proposition could be reduced to a mathematical calculation, figuring most invoices at 60 days, 2 per cent. off, 10 days, and the average borrowing rate at the bank as 6 per cent. per annum.

What can be done to hold trade if you are located within a few miles of a catalogue or mail order house?

President Baker: I want to tell you that there is a lot of bugaboo about this catalogue house business. I will tell you what will knock out the catalogue business: First, the proper, courteous treatment of your customers by yourself; second, have the goods; third, keep a clean store; fourth, keep the stock clean and it goes a long ways. Have a stock of the right sort and I don't believe your customers will do much with catalogue houses.

Local Committees.

Local arrangements were in charge of committees of the Hardware merchants and manufacturers of Canton.

The official souvenir provided by the local committee appointed for this purpose was a large and handsome volume of Canton views richly bound in soft leather.

Convention Committees.

The following committees were announced by President Baker:

RESOLUTIONS.—P. E. Snyder, Blanchester; B. O. Thompson, Cambridge; M. E. Bedblack, Oakwood.

QUESTION BOX.—N. C. Alton, Lorain; B. H. Coe, Youngstown; F. C. Massey, Osborn.

NOMINATIONS.—H. C. Wiseman, Springfield; E. C. Weir, Steubenville; Adam Bretch, Dayton; E. N. Baldwin, Fayette.

LAWS RELATIVE TO THE HARDWARE TRADE.—W. B. Martin, Mansfield; F. L. Harris, Columbus; Carl Shreve.

MEMORIAL.—James Bell, Roscoe; J. A. Meinerding, Fort Recovery; Robert Armitage, Attica; J. W. Sparks, Wilmington.

Resolutions.

The Committee on Resolutions brought in the following report, which was adopted:

We reaffirm the resolutions adopted at the fourth annual session, which were reaffirmed at Cleveland, Ohio, March 1, 1900; also at Columbus, Ohio, February 26, 1903, which were as follows:

Resolved, That any manufacturer or jobber furnishing goods or employing special salesmen to solicit orders from consumers or others not regularly employed in the retail Hardware trade shall be reported by the members offended to the secretary of this association.

Resolved, That the secretary shall then correspond with the offending manufacturer or jobber, and in the event of failure to satisfactorily adjust, report the same in his first report to each member.

Resolved, That the members of this association pledge themselves to patronize such manufacturers and jobbers only as do not offend in above particulars.

Resolved, That the above shall not be constituted as prohibiting manufacturers and jobbers from soliciting and supplying large plants with material actually used in large quantities in the construction of their manufactured product.

Resolved, That we extend to the citizens of Canton our thanks for their many courtesies, to the newspapers for their faithful reports of the meetings, to the telephone companies for free use of telephones, and to the National Cash Register Company for the use of cash register during the convention.

Report of Committee on Memorial.

The report of the Committee on Memorial was as follows:

Your Committee on Memorial note with sorrow that during the past year five of our members have been called from us by death: G. H. Kroft, Ashville; C. A. Weatherford, Chicago Junction; Thomas J. Morris, Lima; J. H. McCune, Newark; Evart Bogardus, Mt. Vernon.

As we look over these names pleasant recollections of the memories of past conventions come to the mind, and with these recollections comes the fond hope that those whom they have left behind shall be reconciled to their loss, knowing of a surety that it was the will of the Great Father that they should be called from these scenes to the great beyond.

Officers for 1906.

The following officers for the ensuing year, recommended by the Committee on Nominations, were unanimously elected:

PRESIDENT, C. S. Johnson, Barberton, Ohio.

VICE-PRESIDENT, F. W. Ingalls, Bryan, Ohio.

SECRETARY, F. A. Bare, Mansfield, Ohio.

TREASURER, C. C. Fouts, Middletown, Ohio.

FINANCIAL SECRETARY, A. L. Shearer, Dayton, Ohio.

EXECUTIVE COMMITTEE.—N. C. Alton, Lorain; Adam Bretch, Dayton; J. V. Osborn, Bellefontaine; John Dixon, Columbus.

DELEGATES TO THE NATIONAL CONVENTION.—F. W. Ingalls, Bryan; F. A. Bare, Mansfield.

Columbus Next Year.

The general sentiment throughout the convention was in favor of meeting next year in the city of Columbus. When the matter came up for discussion a cordial invitation was extended from that city, which was unanimously accepted.

President Baker's Annual Address

was delivered with characteristic felicity. He spoke in part as follows:

I take it that with a very few exceptions the year 1905 has been a prosperous one in the Hardware trade. Inquiry develops the fact that the entire country was prosperous to a high degree, and as the year closed the opinion was universal that 1906 would surpass its predecessor. As a nation we are at peace with the world; Wall Street, with all its peculiar gyrations, does not disturb the country at large. The insurance people are seeking the mourners' bench, and some of the master manipulators of money (as well as one of the queens of finance) are doing time in several of our State institutions. Occasionally it becomes necessary to bring some of these manipulators

BEFORE THE BAR OF JUSTICE

to interrogate them, but when the combined efforts of the Supreme Courts of two great States are powerless to make one of these persons reply to important questions, simply because that person has a superabundance of money and insolence, it looks as though there was trouble ahead, and yet incidents like these of more or less importance do not disturb honest business, and the prosperity that has enveloped the land does not hesitate, but all trades and branches of business are reaping the resultant benefits.

BENEFITS HARDWARE TRADE.

And if there is any branch of trade that will feel this effect of prosperity it surely must be that of Hardware and its kindred and closely related lines. I therefore congratulate you that the prosperity we have enjoyed is yet to continue, and trust that you shall put forth every effort to make the best use of these golden moments, for it is possible that some day they may disappear. Therefore, in the broadest sense, I extend to you as your presiding officer the earnest hope that you may find this to be the best year you have ever had, and trust that when you close your books for 1906 you may have the pleasure of finding the balances very largely on the right side.

CAUTION IS NECESSARY.

I would be remiss, however, if I did not at the same time warn you that it is at such times as these that we are in the greatest danger, and that these promising periods call for the exercise of our best judgment at all times, and that it will be the part of wisdom for you to be very cautious of that attractive and fascinating goddess, "Speculation."

PROGRESS OF THE ASSOCIATION.

Our membership now numbers about 600. We should have at this time 1000 members, but the Ohio dealer moves slowly. He is closely related to his Eastern brother, who does things very deliberately, more so than the Western dealer; and yet we must not complain and will not, for we are having a good, solid, substantial growth. As one who has seen it grow from its very inception I cannot but be greatly pleased with our association. To meet and greet the dealers of the State once a year is to me a genuine delight and a great privilege that I am unable to express in words. I trust you may all enjoy this pleasure as much as does your presiding officer.

I am wondering if the dealers who do not attend our meetings and are not members are aware how much they have failed to gain. While it is true that our first sessions were not as helpful and instructive as now, yet we were in a growing stage and must needs give more attention to the building of the association. But our association is now of such magnitude and importance that our meetings must be of vital interest to all who attend. We expect to make this

AN EDUCATIONAL SESSION

and to this end have given the Question Box the dominant part in our programme. I shall insist on the fullest discussion, and now repeat what I said last year, that no body of tradesmen should come together but for the purpose of being benefited by the results that invariably follow the intelligent, free and candid consideration of practical business methods. We are business men in the fullest sense of the word. Our association was formed for the purpose of mutual advancement, both by educational influences and by the forming of friendships which are helpful and enjoyable, thus adding a dignity and enthusiasm to our calling that must in years to come be a constant source of pleasure and profit.

IMPORTANT QUESTIONS.

The catalogue house question and the Post Parcels bill should and will have some attention at your hands. Regarding the former I suggest that the discussion of this important subject be such as will inure to the benefit of the retail Hardware merchant, and as to the second subject that we take some decisive stand and present an unbroken opposition to any plan which has for its end the enactment of the post parcels law.

You have already noticed the fact that the Hardware and kindred exhibits are now shown in one building. We were extremely fortunate in finding a location in which we could not only make our headquarters but hold our daily sessions and at the same time give abundant space for these exhibits. I doubt if ever a more successful and satisfactory exhibit has ever been made at an annual gathering, and trust that you may find sufficient time to compliment our friends by making an inspection of their wares.

Report of Secretary Bare.

Following are extracts from the annual report of Secretary Frank A. Bare:

The retail Hardware associations of the United States are very rapidly taking a prominent position and being recognized by jobbers and manufacturers as growing and influential bodies. I very firmly believe that if every Hardware merchant in the United States knew what had actually been done by our organization, and if he had any idea of the possibilities and things that may be done by us, he would without a moment's hesitancy identify himself with the movement. Our own State association has accomplished a great many things. We have not lived up to our possibilities, but nevertheless we have

ACCOMPLISHED MUCH.

We have also helped the National in its determined fight against the parcels post and kindred vicious legislation by influencing our Congressmen and United States Senators to oppose such measures. To my mind one of the highest compliments that can be paid to the Ohio Hardware Association is the fact that every man of the original thirteen organizers has stayed with it so long as he was in business and has been an ardent and an enthusiastic supporter of the organization without cessation.

FAR REACHING INFLUENCE.

You will agree with me that in every city or town in our State there is almost without exception a Hardware merchant who is a prominent and influential citizen, who takes an interest in the welfare of the State as well as in the development of his own town. Now, suppose we could have in this organization every such representative man in the State, and—carry it farther—suppose the leading Hardware merchant in every town in the United States were an active worker in his own State association, and through it affiliated with the National.

Suppose the national secretary were to notify every State secretary of the proposed pending dangerous legislation, the State secretary in turn notify an active, influential, wideawake citizen of every town and hamlet in his State, every one of these gentlemen so notified telegraph or write his Representative in Congress and both of his United States Senators. We had

A PRACTICAL DEMONSTRATION

of this thing last fall when the national secretary notified the State secretaries of the order to number rural mail boxes, and the State secretaries in turn entered protest at Washington and wired association members all over their States to do likewise. What was the result? The Fourth Assistant Postmaster General's desk was buried under protesting telegrams, and postmasters over the United States were at once notified to suspend the order until further notice.

Look at the long list of prominent and representative jobbers and manufacturers of the United States who refuse to sell catalogue houses. Now I understand that some of these manufacturers and jobbers still do furnish catalogue house trade in an underground manner, but the majority of them stand fairly and squarely for the retail Hardware merchants of the United States.

INCREASING MEMBERSHIP.

It is the opinion of the secretary that every loyal association member is under obligations to do all in his power to increase our membership. If for one year one man in each of the 88 counties of our great State would take an active and determined interest in our organization we could easily double our membership. The encouragement received from various merchants over the State this year has been satisfactory. A great many hundred personal letters have been written by members to nonmembers urging them to join and come to Canton.

Too much credit cannot be given to Ohio traveling men who have so loyally and enthusiastically furthered our cause. Great credit is also due to the Canton Hardware Company and its representatives for the splendid way in which they have secured new members. They have kept at it all the year.

THE EXHIBIT FEATURE,

as you know, has been added this year. The special exhibit committee appointed by President Baker consists of W. L. Jacobs, Youngstown, chairman; C. S. Johnson, Barberton, treasurer; W. M. Crumrine, Salem, secretary. This committee has worked faithfully. It must be remembered that they had no precedent to govern them. No retail Hardware association of the United States has rented space before this year. Our organization has been one of the pioneers, and this committee helped to blaze the way. This entire auditorium building was rented. There has been no desire on the part of committees or officers of the association to make this a money making scheme. It has been done only for the purpose of broadening the sphere of our association by giving Hardware merchants an opportunity to study new and up to date Hardware and to get better acquainted with manufacturers, jobbers and salesmen.

The Report of the Treasurer,

L. F. Stahler, showed total receipts for the year, including the balance originally on hand, of \$2625 and total disbursements of \$2197.43, leaving a balance on hand of \$427.57.

The Report of the Financial Secretary,

A. L. Shearer, showed over 600 paid-up memberships, the largest number the association has ever had.

The Insurance Company

was represented by George M. Gray of Coshocton, secretary and treasurer of the Ohio Hardware Dealers' Mutual Fire Insurance Company. His report was heard in a committee of the whole, presided over by C. W. Jewell, Utica. Following the report came a discussion of several questions in the Question Box relating to mutual insurance. Mr. Gray's report was in part as follows:

We are demonstrating to you each year, without any cost of money to you, that you have been paying too much money for insurance. Our company has only been in existence three years and has

SAVED 20 PER CENT.

for its policy holders, and in addition to this we have a nice surplus of \$18,071.25, and this money belongs to the policy holders and is held as a reserve in case of

disastrous conflagration. There are those who think that this surplus should be paid out each year in dividends, and I regret to say that there have been some mistaken ideas as to the plan of our company, notwithstanding the fact that we have always tried to be frank and absolutely honest with all information as regards the company, which means no misrepresentation of plans, no promises that cannot be fulfilled. It means the use of the secretary's time and energy for the company; a close watch on each risk, that our lines may not be too large in any one location; that we obtain the proper rate, and hundreds of other little details that must be looked after by the secretary, in order to be fair and honest with the company.

NECESSITY OF SURPLUS FUND.

We are organized under the laws of Ohio, Statute No. 3634, and in accordance with this statute we are compelled by law to keep a surplus fund of 50 per cent. of premiums on risks in force. For example, take our fourth annual report, just read. The insurance reserve, 50 per cent. of premiums on risks in force, viz., \$6573.51, which leaves a new cash surplus of \$10,997.74. The re-insurance reserve fund, viz., \$6573.51, is for the sole purpose of protecting policy holders whose policies would not have expired, in case the company would become insolvent. In other words, it represents the unearned premium on all policies in force at any and all times and cannot be paid out for either losses or expenses. Note, if you please, we have left, according to our statement, a net cash surplus fund of \$10,997.74.

GUARDING AGAINST ASSESSMENTS.

Now, to those who may be in favor of paying larger dividends. Suppose we have a number of disastrous fires. It would not be long until we would be compelled to make an assessment, for as soon as the surplus fund is exhausted and the \$10,997.71 referred to paid out the insurance commissioner would order an assessment, and while we are allowed under the law to make three assessments up to three times each annual premium, one assessment would prove very detrimental to the progress and welfare of the company. With careful management in the future as in the past, we do not anticipate any assessments. We have never expected any assessments, but we must remember that the fire insurance business is a precarious business—not like the Hardware business. It is strictly a gamble.

I can say without contradiction that we have a vast and intricate company, built up through the three years of toil and struggle, in which every policy holder has had a part, and I know you will not permit either neglect or undue selfishness to retard the progress of the company, so that we may be ready for any storm or strain. By careful management, by keeping our lines down, having our risks well scattered, we will see the great value of our increasing surplus. We do and always have believed in our company. It was built on

A SOLID FOUNDATION.

It was hard to organize, but we must not repose in fancied security that we cannot have heavy losses by fire. If such a thing were possible it would not be long until we would be getting insurance for a mere trifle. The pressing problem before your secretary and officers is, How to combine all difficulties into one harmonious whole. We must first get the business at a profit that will return to you dividends. We must be governed by the law and go in accordance with the statute under which we are organized. We must have the loyal support of the Hardwaremen, all working in accordance with a single controlling mind, without friction, without conflict, without cross-purpose of any kind, until the whole works with a nice precision of a machine.

The insurance company's financial report, under date of January 1, 1906, may be summarized as follows:

Balance ledger assets, December 31, 1904.....	\$16,795.71
Total income.....	13,805.65
Total last balance and income.....	\$30,601.36
Total disbursements.....	12,483.81
Balance.....	\$18,117.55
Less premiums in course of collection on business written prior to October 1, 1905.....	46.30
Net cash assets.....	\$18,071.25

CONVENTION NOTES.

The Ohio Association has been fortunate in being most ably officered. President J. F. Baker, whose double term of service has just expired, has done vigilant and effective work for the Hardware merchants of the State. The association has profited not only from his wise direction

of its affairs but also from his tact as a presiding officer and his skill as a parliamentarian. Secretary F. A. Bare has a national reputation as one of the most able, tireless and enthusiastic association workers in the country. Vice-President Johnson, now president, and Financial Secretary Shearer and Treasurer Stahler have been equally faithful and efficient in discharging their duties.

The delegates to the last National Retail Hardware convention were represented by President-elect Johnson, who read a comprehensive report, indorsing the work of the national body in all departments and commending its officials.

After roll call, which occupied nearly an hour of the first session of the convention, it was voted, on motion of H. C. Wiseman, to discontinue this portion of the programme in the future. There are some slight disadvantages resulting from a large membership!

The Berger Mfg. Company, Canton, had headquarters at the Courtland, where it was represented by H. L. Sosenheimer, L. D. Mercer and W. J. Myers. A handsome Rookwood stein bearing a view of the plant was presented to all visitors at the factory.

Much sympathy was expressed for H. C. Wiseman, Springfield, who was compelled to leave for home the second day of the convention on account of illness. Mr. Wiseman is one of the best known and most active members of the association. In the report of the insurance company Mr. Gray acknowledged the efforts of Mr. Wiseman on behalf of that body, referring to him facetiously as the "cyclone Hardwareman who turns his stock more times during the year than any other merchant in the State."

The pinks distributed by the American Steel & Wire Company were highly appreciated and added much to pleasure and holiday aspect of hundreds of wearers.

Free telephone service to all parts of the State was accorded to members of the association between the hours of 4 p.m. and 9 a.m.. This courtesy was very favorably received and taken advantage of by many.

The headquarters of Bostwick-Braun Company at the Courtland were always thronged with visitors. The company had fourteen representatives present, who are enumerated elsewhere, and entertained its guests in a royal manner. Instrumental and vocal music were furnished by talent engaged for the occasion.

Jobbers Present.

The following is a fairly complete list of jobbing houses represented at the convention:

GEO. WORKINGTON COMPANY, Cleveland: G. P. Newton, C. A. Jewett, J. E. Maule, L. H. Webber, J. H. Crago, H. L. Seif, C. L. Seith, I. J. Hess, J. I. Morris and J. H. Barch.

WM. BINGHAM COMPANY, Cleveland: Frank Blair and George Yost.

MCINTOSH HARDWARE CORPORATION: T. C. Harris, J. C. Carson and W. W. Damel.

BINDLEY HARDWARE COMPANY, Pittsburgh: W. W. Jacob and E. J. Lloyd.

STOLLBERG HARDWARE COMPANY, Toledo: Day Gordon, E. C. White, J. Mandler.

J. M. & L. A. OSBORN COMPANY, Cleveland: L. A. Osborn, J. F. Reichert, J. G. Henninger, D. A. Hossler, E. C. Howard, R. E. Curtis, W. J. Hanrahan, J. J. McGinniss, A. W. Howe and H. W. Brainard.

BOSTWICK-BRAUN COMPANY, Toledo: H. A. Nusbaum, F. O. Crosby, F. W. Cox, W. J. Oberlin, I. N. Savage, C. W. Corlett, S. W. Gano, E. H. Hartman, J. C. Perego, F. C. Bath, E. D. Jones, F. A. Dewey, H. L. Thompson and M. H. Nusbaum.

STANDART-SIMMONS HARDWARE COMPANY, Toledo: R. L. Martin, G. P. Clay, J. H. Stralder, F. P. Kelp, Carl Riche, Dan Yant, Chas. Osborn, C. B. Bennett and W. H. Standart.

SIMMONS HARDWARE COMPANY, St. Louis: W. G. Osborne. HIBBARD SPENCER, BARTLETT & Co., Chicago: A. P. Reiter and W. W. Geach.

T. H. NEVIN COMPANY, Allegheny, Pa.: Messrs. Sadd, Cox and Stranahan.

Others Present

were as follows:

H. W. Avery, Avery Stamping Company, Cleveland.
A. V. Ellis, Schneider & Trenkamp Company, Division, American Store Company, Cleveland.

A. E. Fenn and G. B. Wagner, Patterson-Sargent Company, Cleveland.

G. B. Clayton, Russell & Erwin Mfg. Company, New York.
G. W. Johnson, Reading Hardware Company, Reading, Pa.
C. W. Upham, Sargent & Co., New York.
J. A. Carter, American Fork & Hoe Company, Cleveland.
L. B. Culbertson, Consolidated Pump Company, Toledo.
Cleveland Stamping & Tool Company, Cleveland.
O. C. Sarver, J. Findlay, Jr., W. H. Locke and W. P. Shook, National Lead & Oil Company, Pittsburgh.
Daniel Stern, *The American Artisan*, Chicago.
E. S. Adams, *The Iron Age*, Cleveland.
A. H. Chamberlain, *The Iron Age*, New York.

EXHIBITS.

The exhibit department, or, as it was termed by the local press, the "Hardware Exposition," filled all the corridors and balconies of the big Auditorium. Many manufacturers desiring space were unable to secure it. The exhibits were in charge of a committee, whose arduous duties were faithfully performed. The following is a list of those exhibiting at the Auditorium and in suites at the hotels:

ACME WASHING MACHINE COMPANY, Columbus, Ohio: Acme Washing Machines, Wringers and Wringer Mops.
ACME WHITE LEAD & COLOR WORKS, Detroit, Mich.: New Era Paints, Neal's Enamels and Carriage Paints, Varnishes, &c. Represented by E. Hoag and J. Dougall.
ADRIAN FENCE COMPANY, Adrian, Mich.: Adrian Fence. Represented by J. Gabagan and D. H. C. Bowen.
ALLESTON-CLARKE COMPANY, 79 Reade street, New York: Lockwood Mfg. Company's Builders' Hardware, F. & N. Lawn Mowers, Jackson Shovel Company's Shovels, Keystone Padlocks, Arcade Files and Starr Bros.' Belts. Represented by B. Baddley.
AMERICAN STEEL & WIRE COMPANY, Chicago: American and Ellwood Fence. Represented by J. W. Welch, S. F. Deems and A. E. Ward. Distributed carnations.
AMERICAN WOODEN WARE MFG. COMPANY, Toledo, Ohio: Toledo and Monarch Rotary Washers, Run-Easy Washers and Hero Barrel Churns. Represented by J. H. Taylor.
ANGLE STEEL SLED COMPANY, Kalamazoo, Mich.: Sleds, Wagons, Folding Chairs and Steel Stools. Represented by H. G. M. and N. Howard.
ART STORE COMPANY, Detroit, Mich.: Laurel Stoves and Ranges and Twentieth Century Heater. Represented by J. Huntley, M. H. Staas and H. V. Pay.
ASHLAND STEEL RANGE & MFG. COMPANY, Ashland, Ohio: Ashland Steel Ranges. Represented by F. R. Marks and A. J. Bentz.
E. C. ATKINS & Co., Indianapolis, Ind.: Line of Hand Saws. Represented by W. E. Jackson and S. M. Perrigo. Souvenir, memorandum book.
ATLANTIC STAMPING COMPANY, Rochester, N. Y.: Line of Galvanized Tin and Copper Ware, Oil Cans, &c. Represented by W. W. Lyman and B. A. Brown.
BAKER, McMILLEN COMPANY, Akron, Ohio: Akron Eclipse and Standard Eclipse Spirit Levels. Represented by D. A. James.
BILLINGS-CHAPIN COMPANY, Cleveland, Ohio: Paints, &c.
GEO. H. BISHOP & Co., Lawrenceburg, Ind.: Saws and Saw Files.
BLACK SILK STOVE POLISH WORKS, Sterling, Ill.: Black Silk Stove Polish. Represented by L. K. Wynn.
BLUFFTON MFG. COMPANY, Bluffton, Ind.: Rainbow Rotary Washer. Represented by H. and A. L. Kapp.
HERMANN BOKER & Co., 101 and 103 Duane street, New York: Tree brand line of Pocket Cutlery, Shears and Razors, Razor Strops, &c. Represented by G. M. Van Valkenberg.
BONNOT COMPANY, Canton, Ohio: Canton Perfect Blast Furnaces.
BORN STEEL RANGE COMPANY, Cleveland, Ohio: Family and Hotel Ranges and Kitchen Equipment. Represented by A. Corson.
BOSS WASHING MACHINE COMPANY, Cincinnati, Ohio: Washing Machines. Represented by E. L. Enneking.
BRADFORD UNION MFG. COMPANY, Bradford, Pa.: Semicircular Level, Plumb and Inclinator. Represented by A. W. Davis.
BRISCOE MFG. COMPANY, Detroit, Mich.: Heavy Galvanized Ware, Turquoise and Japonay Enamelled Ware and Briscoe Tinware. Represented by N. S. Gotshall.
BROWN MFG. COMPANY, Zanesville, Ohio: Wagons and Farming Implements. Represented by W. F. Darling.
BUCHER & GIBBS PLOW COMPANY, Canton, Ohio: Large exhibit of Plows and other Agricultural Implements. Represented by H. J. Ringle, G. W. Adrian and A. E. Diesem.
BUCKEYE ALUMINUM COMPANY, Doylestown, Ohio: Line of Aluminum Hollow Ware. Represented by W. A. Kennedy, Canton.
BUFFALO OIL, PAINT & VARNISH COMPANY and McDUGALL VARNISH COMPANY, Buffalo, N. Y.: Mixed Paints, Varnishes and sundries. Represented by Albert Jochen, Karne Ferguson and J. R. Humelbau. Souvenir, buffalo head stick pin.
CANADIAN CORDAGE & MFG. COMPANY, Peterborough, Ont.: Binder Twine. Represented by G. N. Foresman.
CANTON ART METAL COMPANY, Canton, Ohio: Metal Furniture, Steel Ceilings, Skylights, Conductor Pipe and Fittings. Represented by W. W. Clark. Souvenir, book of Canton views.
CANTON BUGGY COMPANY, Canton, Ohio: Automobile Surrey

and Piano Box Buggy. Represented by D. L. Tschantz and E. F. Haak.

CANTON CLOTHES DRYER & MFG. COMPANY, Canton, Ohio: Clothes Drying Apparatus. Represented by J. S. Shanks.

CANTON HARDWARE COMPANY, Canton, Ohio: Handsome display of Builders' Hardware. Represented by W. O. Banks and T. J. Maddrell. Souvenir, paper weight.

CANTON PUMP COMPANY, Canton, Ohio: Pumps. Represented by Fred. Whiting.

CARBORUNDUM COMPANY, Niagara Falls, N. Y.: Carborundum Knife Sharpeners, Razor Hones and Sharpening Stones. Represented by C. W. Barden, W. Walters and M. G. Loder. Souvenirs, Knife Sharpeners and Stones in leather cases.

PHILIP CAREY MFG. COMPANY, Lockland, Ohio: Roofing, Pipe Covering, Paint, Cement and Asbestos Paper. Represented by J. C. Northend.

CARNAHAN STAMPING & ENAMELING COMPANY, Canton, Ohio: Line of French Gray Ware. Represented by W. E. Shoemaker.

CHAMPION STEEL RANGE COMPANY, Cleveland, Ohio: Champion Steel Ranges, Oak Stoves and Gas and Hot Water Heaters. Represented by C. H. Miller, C. H. Miller, Jr., J. A. Herbst, F. S. Alber and W. S. Senter. Souvenir, fancy plate.

CHAPEL FURNACE COMPANY, Morenci, Mich.: Majestic Warm Air Heaters. Represented by J. M. Triggs.

CLEVELAND WINDOW GLASS COMPANY, Cleveland, Ohio: Cleveglass, Domes and Shades. Represented by R. P. Anthony, H. C. Malcomb, W. Alpers, H. C. Stewart, R. W. Burnham and W. A. Haas.

COLONIAL CARRIAGE COMPANY, Circleville, Ohio: Buggies and other Vehicles. Represented by A. B. Hanshue.

COLONIAL PAINT COMPANY, Cleveland, Ohio: B. A. P. Paints and Titledike Varnish. Represented by E. A. Benedict, M. A. Elseman, J. H. Kennedy and W. E. McPherson. Souvenirs, sample cans of Titledike.

COLUMBUS BUGGY COMPANY, Columbus, Ohio: Runabout and Phaeton. Represented by C. B. Hardman.

CRIBBEN & SEXTON COMPANY, Chicago: Universal Stoves and Ranges. Represented by D. E. Magee. Souvenirs, match boxes and memorandum books.

DANGLER STOVE COMPANY, Cleveland, Ohio: Gas and Gasoline Ranges. Represented by C. W. Hurst.

DEERLICK OIL STONE COMPANY, Chagrin Falls, Ohio: Deerlick Oil and Scythe Stones and Display Cases. Represented by Z. L. Kent.

DE KALB AND UNION FENCE COMPANIES, De Kalb, Ill.: Farm, Poultry, Garden and Lawn Fence and Gates and Barb Wire. Represented by G. C. Young.

M. DE LIMA & Co., New York: Puritan Chick Food. Represented by D. R. Ballmer.

DESHLER MAIL BOX COMPANY, Deshler, Ohio: Success Cream Separators, Rural Mail Boxes and Sheet Metal Specialties. Represented by S. A. Jones.

GEO. W. DIENER MFG. COMPANY, Chicago: Torrid Tanners' Furnace. Represented by M. G. Walker.

DOVER MFG. COMPANY, Canal Dover, Ohio: Asbestos Sad Irons and Counter Display Stand. Represented by O. A. Keyser and W. F. Boley.

EASY WASHING MACHINE COMPANY, St. Mary's, Ohio: Easy Washing Machine and Modern Churn. Represented by D. A. Pepple.

ELLER MFG. COMPANY, Canton, Ohio: Metal Ceilings, Tin Plate, Cornice, Conductor Pipe, &c. Represented by W. E. Voight and D. L. Spotts.

ESTATE OF P. D. BECKWITH, Dowagiac, Mich.: Round Oak Stoves, Ranges and Furnaces. Represented by J. A. Howard, D. W. Van Antwerp, H. A. Miller and J. C. Van Male. Souvenir, story book.

FERROSTEEL COMPANY, Cleveland, Ohio: Registers, Ventilators, &c. Represented by F. B. Cowley and A. E. Menke.

FIEBEGGER HEATING COMPANY, Akron, Ohio: Ath-a-nor Heating Stoves and Furnaces. Represented by C. C. Hammond, H. J. Hough and F. Fiebeger.

FOREST CITY PAINT & VARNISH COMPANY, Cleveland, Ohio: Forest City Paints and Varnishes. Represented by A. H. Smith, A. E. Thompson, E. W. Thompson, L. Zimmerman and F. E. Pile. Souvenir, fancy plate.

FULPER POTTERY COMPANY, Flemington, N. J.: Improved Natural Stone Filters, Sanitary Water Coolers and line of Individual Hotel Service Ware. Represented by S. L. Parker.

GEM CITY STOVE COMPANY, Dayton, Ohio: Clermont Stoves and Ranges and Perfect Gas Range. Represented by J. P. Bauer and J. D. Lennon.

HART & COOLEY COMPANY, New Britain, Conn.: Registers, Cold Air Faces and Lockers. Represented by J. H. Robinson and A. I. Grocock.

HASTINGS INDUSTRIAL COMPANY, Chicago: National Cream Separator. Represented by R. Branegan.

HEATH & MILLIGAN MFG. COMPANY, Chicago: Heath & Milligan Mixed Paints and Interior Finishes. Represented by J. C. Anderson, H. B. Rockwell, K. H. Jones, R. P. Bradley of Sterling Paint & Glass Company, Pittsburgh, and Messrs. Alpers and Stewart of Cleveland Window Glass Company. Souvenirs, cuff buttons and song.

HOFFMAN HEATER COMPANY, Lorain, Ohio: Hoffman Water Heaters. Represented by W. C. Darr.

HOME PRIDE RANGE COMPANY, Marion, Ind.: Malleable Ranges with new cylinder Grate. Represented by F. D. White.

HUMPHRIES MFG. COMPANY, Mansfield, Ohio: Hydraulic Rams, Hand and Power Pumps, Hercules Compressed Air Painting Machine and Protector Spray Pump. Represented by M. A. Pollock and E. W. Dickey.

INDIANA MFG. COMPANY, Peru, Ind.: North Star Refrigerators. Represented by D. R. Billmer.

H. W. JOHNS-MANVILLE COMPANY, Cleveland, Ohio: Asbestos Roofings, Papers and Cement. Represented by J. D. Smith and A. W. Tinker.

JOLIET STOVE COMPANY, Joliet, Ill.: Moore's Stoves and Ranges. Represented by C. P. Thompson and Edw. Alexander. Souvenir, bag tag.

KAMPE BROS., 8-12 Reade street, New York: Star Safety Razor, Strops, &c. Represented by W. J. Hartley.

KOCH BROS. CARRIAGE WORKS, New Waterford, Ohio: Phaeton and Buggy. Represented by G. J. Koch, T. H. Nimon and Mr. Murray.

F. E. KOHLER & Co., Canton, Ohio: Hand Implements. Curry Combs, Shovels, Saw Sets and Antirattlers. Represented by F. E. Kohler and D. J. Walrath. Souvenir, pocket dictionary.

KRAMER BROS. FOUNDRY COMPANY, Dayton, Ohio: Cement Sidewalk Tools, Chimney Tops, Stove Carriers, Casters, &c. Represented by E. V. Gilbert.

LAMB WIRE FENCE COMPANY, Adrian, Mich.: Lamb and Peerless Fence. Represented by M. L. Gillen.

C. W. LASHER MFG. COMPANY, Davenport, Iowa: Pot Cover, Cabinet and Kitchen Kumfort Plate Scraper. Represented by C. W. Lasher, Jr.

LAWRENCE STOVE MFG. COMPANY, Buffalo, N. Y.: Lawrence Odorless Hot Plate. Represented by F. L. Grady. Souvenir, paper weight.

LINDSAY LIGHT COMPANY, Chicago: Lindsay Lights, Mantles and Incandescent Gas Supplies. Represented by H. L. Towne.

LOVELL MFG. COMPANY, Erie, Pa.: Anchor Brand Clothes Wringers. Represented by I. B. Wingate and J. M. Webber.

LOWE BROS. COMPANY, Dayton, Ohio: High Standard Paints and Varnish. Represented by E. E. Gibbs and C. S. Kennedy. Souvenir, telephone card index and watch fob.

MCCASKEY REGISTER COMPANY, Alliance, Ohio: McCaskey Account Registers. Represented by A. J. Tice.

FRANK C. McLAIN COMPANY, Canton, Ohio: Garwood Steam Heaters, using gas for fuel. Represented by E. F. Bachman.

MALLEABLE STEEL RANGE MFG. COMPANY, South Bend, Ind.: Malleable Steel Ranges. Represented by H. A. Engman, Jr., and A. W. Wallin. Souvenirs, hat pins and cuff buttons.

MANNING, BOWMAN & Co., Meriden, Conn.: Eclipse Bread-maker and Meteor Coffee Percolator. Represented by H. J. Gute.

MAY & FIEDEGER, Akron, Ohio: Akron Air Blast Furnaces. Represented by F. B. Scott, H. Rasor and H. Rawling.

MICHIGAN STOVE COMPANY, Detroit, Mich.: Garland Stoves, Ranges and Water Heaters. Represented by J. W. Weldon and J. J. Zipperer.

NATIONAL CUTLERY COMPANY, Detroit, Mich.: Display of raw material and finished Butcher Knives, Axes, Hatchets, Scythes, &c. Represented by E. H. Sutton and M. D. Squire. Souvenir, pocket Stone and "Keep Smiling" cards.

NATIONAL PAINT & VARNISH COMPANY, Cleveland, Ohio: Graphite Elastic Paint for Tin and Iron Roofs. Represented by L. M. Stern. Souvenir, ash tray.

NATIONAL ROOFING COMPANY, Tonawanda, N. Y.: Security and National brands of Asphalt Roofing. Represented by C. H. Newell and W. H. Camerson. Souvenir, thermometer.

NATIONAL STOVE COMPANY, Lorain, Ohio: Direct Action Gas Ranges, Lorain Steel Range and Insurance Gasoline Stoves. Represented by H. E. Lanford and C. E. Bartenbach.

NATIONAL VEHICLE COMPANY, Mansfield, Ohio: Phaeton and Piano Box Buggy. Represented by S. L. King.

NEW METHOD COMPANY, Mansfield, Ohio: Complete line of Gas Ranges. Represented by B. A. Baxter, H. H. Sanford, B. E. Hamlin and M. J. Casserly.

NEY MFG. COMPANY, Canton, Ohio: Reversible Hay Cars, Pulleys, Lawn Mowers, Wire Stretchers, Barn Door Hangers and specialties. Represented by H. H. Troxel, A. M. True, I. N. Kennedy and D. D. Miller.

NICHOLLS MFG. COMPANY, Ottumwa, Iowa: Nicholls' Framing Square, Standard Squares and Common Sense Miter Boxes. Represented by J. W. Huston. Souvenir, miniature Square.

NICKEL PLATE STOVE POLISH COMPANY, Chicago: Black Kid, Black Eagle and Black Jack Stove Polish. Represented by J. W. Gill.

A. T. NYE & SON COMPANY, Marietta, Ohio: Leader Stoves and Ranges. Represented by A. T. Nye and M. J. Weldon.

OHIO RUBBER COMPANY, Cleveland, Ohio: Mechanical Rubber Goods, Belting, Hose, Packing, Valves, &c. Represented by C. G. Elchenberger and W. S. Showacre.

OHIO VARNISH COMPANY, Cleveland, Ohio, and WARREN PAINT COMPANY, Warren, Ohio: Chi-namel Varnish and Warren Ready Mixed Paints. Represented by A. J. Shepard, H. Kapelsky and W. J. Knapp. Souvenirs, lead pencils and holders, buttons and bill books.

ONE MINUTE WASHER COMPANY, Sandusky, Ohio: One Minute Washer. Represented by C. E. Breniman and H. Mendenhall.

J. M. & L. A. OSBORN COMPANY, Cleveland, Ohio: Charcoal Iron Tin Plate, Steel Plates, Tinners' and Furnace Supplies. Represented by D. A. Henninger, E. C. Hossler, R. E. Howard, R. E. Curtis, A. W. Howe and H. W. Bralnard.

PEABODY BUGGY COMPANY, Fostoria, Ohio: Stanhopes, Phaetons, Automobile Buggy and Piano Box Buggy. Represented by J. L. Allen, A. P. Vogt and E. M. Wright.

PENNSYLVANIA STOVE COMPANY, Ellwood City, Pa.: Gas and Coal Stoves and Ranges. Represented by T. C. Read.

WM. PETER ESTATE, Toledo, Ohio: Peter Screens and Screen Doors. Represented by Alvin Peter and A. J. Cone.

PETERS ARMS & SPORTING GOODS COMPANY, Cincinnati, Ohio: Peters' Ammunition and general Sporting Goods. Represented

by Dell Gross, Dan. Gepfert and P. G. Orr. Souvenir, stick pin.

PIKE MFG. COMPANY, Pike, N. H.: Pike's Selling Assortments of Oil Stone, Scythe Stone and Razor Hone Boxes, Corundum Wheels and Stonoll. Represented by R. J. Horton and H. L. Davis. Souvenirs, blotters, miniature Oil Stone Box and paper weight.

PITTSBURGH PLATE GLASS COMPANY, Pittsburgh: Patton's Sun Proof Paints and Rennous, Kleinle & Co.'s Brushes. Represented by A. W. Martin, A. R. Hoch, B. C. Root, P. D. Martin, J. K. Wenham and J. J. Tanyan. Souvenir, savings bank like can of Paint.

PITTSBURGH STEEL COMPANY, Pittsburgh, Pa.: Pittsburgh Perfect Farm, Field and Poultry Fence. Represented by E. D. Findlay, G. W. Hampshire and E. Steytler. Souvenir, cane.

PITTSBURGH STOVE & RANGE COMPANY, Pittsburgh, Pa.: Cinderella and Good Luck line of Stoves and Ranges. Represented by H. M. Baldwin, J. H. Reed, C. Knox and F. L. Wood. Souvenir, leather wallet.

PORTER SCREEN MFG. COMPANY, Burlington, Vt.: Porter made to order Screens. Represented by E. D. Segar.

PRATT & LAMBERT, Buffalo, N. Y.: Star brand Varnishes and Nukote and Dulcote Finishes. Represented by A. S. Butler, E. B. Bailey and Mr. Sproul. Souvenir, match safe.

T. C. PROUTY COMPANY, Albion, Mich.: Cushion Track Parlor Door Hanger, Hasp Lock and Barn Door Hangers. Represented by Mark Merriman and J. D. Rader.

REVOLVING BIN COMPANY, Chicago: Revolving Nail Bin. Represented by E. I. Lantz.

RIESTER & THESMACHER COMPANY, Cleveland, Ohio: Self Righting Brass Cuspidors. Represented by E. Fassinger.

OSCAR C. RINSON COMPANY, Chicago: Single and Double Acting Door Checks. Represented by H. A. Stoddard and M. H. Force.

ROSS SUPPLY COMPANY, Greenville, Ohio: Rex Wind Mill and Pump. Represented by G. H. McClure.

CALVIN RUSSELL, Penn Yan, N. Y.: Buckskin Sheathing, Russelloid Roofing and Carpet Lining. Represented by J. W. Lunn. Souvenir, lead pencil.

SANITARY CREAM SEPARATOR COMPANY, Bluffton, Ohio: Perfect and Sanitary Cream Separators. Represented by W. E. Diller.

SCHNEIDER & TRENKAMP COMPANY, division of American Stoves Company, Cleveland, Ohio: Reliable Gas and Gasoline Ranges. Represented by A. V. Ellis and J. J. Mullen.

SCHUMACHER-LIECHLEY COMPANY, Hartsville, Ohio: Door and Window Screens. Represented by E. B. Liehley.

J. H. & F. A. SELLS COMPANY, Columbus, Ohio: Harness, Robes and Blankets and Safe Storm Fronts. Represented by E. L. Leonard and G. J. Gates.

SHARPLES SEPARATOR COMPANY, Westchester, Pa.: Sharples' Tubular Cream Separators. Represented by Bert Dunn, G. H. McKee and B. W. Haxall. Souvenir, pocket mirror.

SHELBY SPRING HINGE COMPANY, Shelby, Ohio: Double Acting Floor Hinges and Hardware Specialties. Represented by H. W. Steele and J. D. Rader.

SIMONDS MFG. COMPANY, Chicago: Line of Hand and Cross Cut Saws and Display Fixtures. Represented by W. J. Feddery and R. H. Newman. Souvenirs, puzzles and lead pencils.

SMITH & JUSTUS MFG. COMPANY, Lima, Ohio: Up to date Freezers. Represented by L. E. Justus. Served ice cream.

C. F. SMITH COMPANY, De Kalb, Ill.: Franklin Woven Wire Stretcher and Charles Wire Stretcher Gate. Represented by C. F. Smith.

STAMFORD GAS STOVE COMPANY, Stamford, Conn.: Stamford Gas Ranges and Odorless Gas Heaters. Represented by G. H. Vroom. Souvenir, blotting pad.

STANDARD LIGHTING COMPANY, Cleveland, Ohio: New Process Gas and Gasoline Ranges and Monarch Gas Heaters and Ovens. Represented by C. E. Bartenbach and H. E. Lanford.

STANDARD MFG. COMPANY, Shelby, Ohio: Leader, Winner and New Shelby Washers. Represented by A. L. Stump.

STANDARD VARNISH WORKS, Elm Park, Staten Island, N. Y.: Elastic and Gutta Percha Finishes, &c. Represented by W. A. Kennedy, Canton.

STANLEY WORKS, New Britain, Conn.: Butts and Hinges and Builders' Hardware. Represented by J. H. Robinson and A. I. Grocock. Souvenir, calendar.

STANTON HEATER COMPANY, Martin's Ferry, Ohio: Stanton Seamless Warm Air Furnaces. Represented by S. L. Wood and C. A. Rex.

STOWELL MFG. COMPANY, Jersey City, N. J.: Monarch Brand Roofing Materials. Represented by A. D. Westcott, J. E. Ford and D. E. Minard. Souvenir, watch fob.

SUN VAPOR STREET LIGHT COMPANY, Canton, Ohio: Gasoline Street and House Lights, Fixtures, &c. Represented by T. Streiber.

THRESHER VARNISH COMPANY, Dayton, Ohio: Varnishes, &c.

TOLEDO STOVE & RANGE COMPANY, Toledo, Ohio: Gem Stoves and Ranges and Taylor Gas Heater. Represented by B. F. Long and B. J. Taylor.

TWENTIETH CENTURY HEATING & VENTILATING COMPANY, Akron, Ohio: Twentieth Century Hot Air Furnaces and Steam and Hot Water Boilers. Represented by W. S. Grosjean and J. Keach.

TWENTIETH CENTURY MFG. COMPANY, Mansfield, Ohio: Twentieth Century Washing Machine. Represented by D. H. Cross and S. G. Glasener.

UNION METALLIC CARTRIDGE COMPANY and REMINGTON ARMS COMPANY, New York: Display of trade advertising matter. Represented by R. O. Helkes and E. B. McNeil. Souvenir, stick pin.

U. S. HOE & TOOL COMPANY, Columbus, Ohio: Steel Goods. Represented by B. F. Hadley.

UNITED STATES REFINING COMPANY, Cleveland, Ohio: Everlasting Roof and Metal Paint.

UNIVERSAL COUPLER COMPANY, Cincinnati, Ohio: Universal Hose and Lead Pipe Coupler. Represented by W. Bieker.

VERMONT FARM MACHINE COMPANY, Bellows Falls, Vt.: U. S. Cream Separators. Represented by F. J. Smith.

WELCH COMPANY, Nankin, Ohio: Welch Rural Mail Boxes and Locks. Represented by E. G. Welch.

WHITE LILY WASHER COMPANY, Davenport, Iowa: White Lily, White Rose and White Daisy Washers and Motor Washers. Represented by R. P. Searle and A. F. Victor. Souvenir, memorandum book.

WINCHESTER REPEATING ARMS COMPANY, New Haven, Conn.: Winchester Rifles and Shot Guns, Cartridges and Loaded Shells. Represented by R. L. Trimble and J. R. Taylor. Souvenir, hat pin.

WOOSTER BRUSH WORKS, Wooster, Ohio: Line of Paint, Varnish, Whitewash, Kalsomine and Paper Hangers' Supplies. Represented by W. D. O. H. and D. J. Foss.

YALE & TOWNE MFG. COMPANY, 9 Murray street, New York: Blount Door Checks, Yale Locks and Builders' Hardware. Represented by E. C. Waldvogel. Souvenir, paper cutter.

AMHERST.

J. Wesbecker & Co.

AMSTERDAM.

H. B. Robinson.

ANSONIA.

Searl & Fry.

R. D. Mede.

ANTWERP.

Buckeye Hardware Company.

Gordon Bros.

ARCANUM.

Flory & Hall.

Olwin & Tullis.

ARCHIBOLD.

Vernier & McLaughlin.

ARLINGTON.

Ohio Hardware Company.

ASHLAND.

Union Hardware & Supply Co.

ASHLEY.

B. Bartholomew.

ASHVILLE.

G. H. Kroft & Son.

ASHTABULA.

Crosby Hardware Company.

W. E. Dudley.

Paine Bros.

Turner & Smith.

Osborn & Churchill.

Union Hardware Company.

BELLE VALLEY.

Hellyer & Son.

BELLEVUE.

Johnston Hardware Company.

BELOIT.

W. P. Bailey Hdw. & Eng. Co.

BELPRE.

Wharton & Reed.

BEREA.

F. Brown.

M. J. Lawrence.

BESCHOLZ.

Goodlin & Co.

J. F. Robbins.

BERLIN CENTER.

C. J. Fifer.

BETHEL.

Davis & Hibbets.

BLADENBURG.

E. L. Wolfe.

BLANCHESTER.

P. E. Snyder & Co.

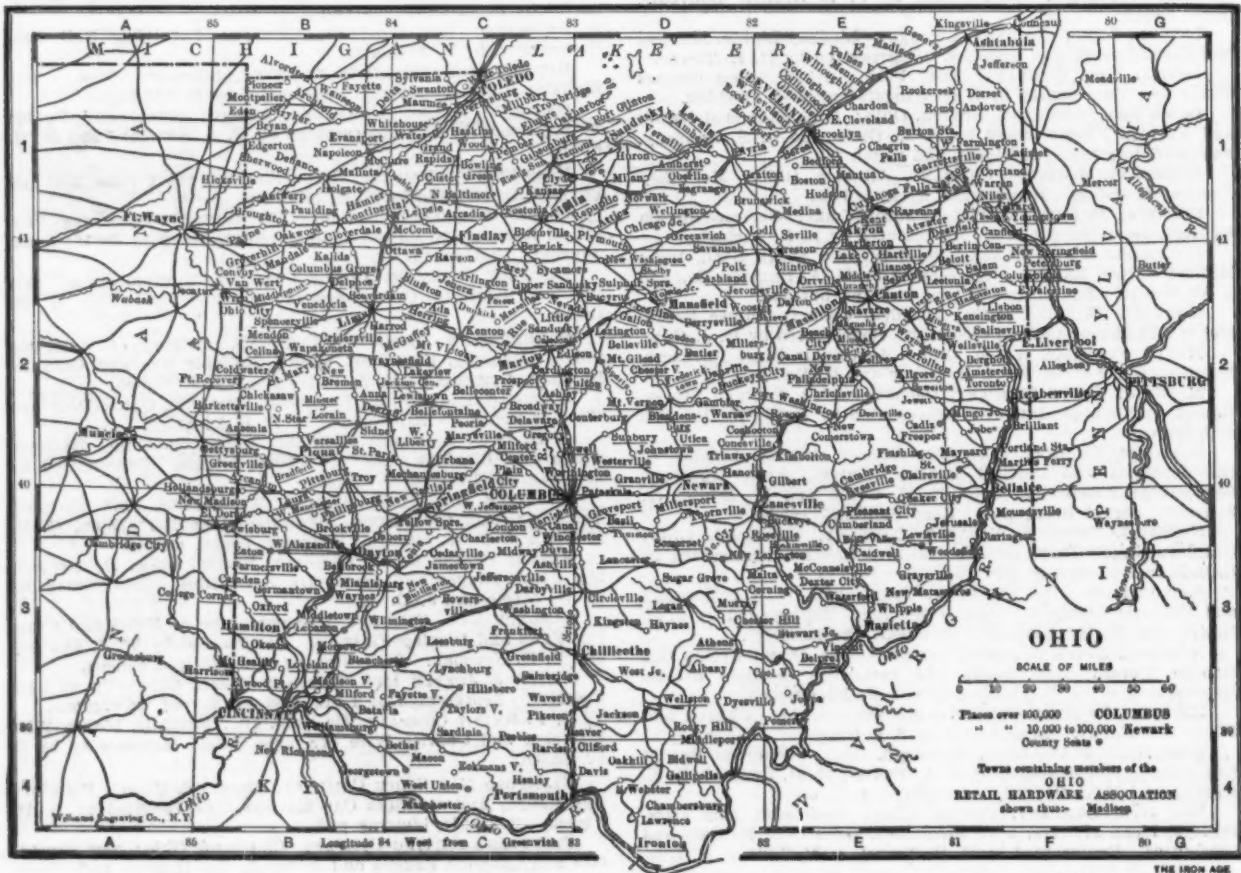
BLUFFTON.

A. D. Lugibhl.

John Fett.

BOWLING GREEN.

Folk & Hopper.



Hardware Association Map of Ohio.

YOUNGSTOWN FURNACE & SUPPLY COMPANY, Youngstown, Ohio: Lion Combination Furnace for coal or gas. Represented by Alvin Rice and M. A. Wick.

Ohio Association Map.

A glance at the map of Ohio here reproduced will show at once how thoroughly the State has been covered by the Hardware Association. Towns and cities containing members are underscored and distinguished in size according to the system now probably familiar to readers of *The Iron Age*. It must be remembered that this is not strictly a retailers' association, but includes a number of houses which do more or less of a jobbing business. Representation is about equally good in all parts of the State, total paid-up membership now standing over 600, equal to about 50 per cent. of the total number of Hardware merchants in the State.

MEMBERS OF THE OHIO HARDWARE ASSOCIATION.

ADA.
Morrow & Ewing.
AKRON.
Hardware & Supply Company.
Harter & Miller.
Kidder Hardware Company.
May & Fieberger.
Pouchott-Hunsicker Company.
Pettill Bros. & McDowell.
ALLIANCE.
Allot & Keyder Hardware Co.
Crowe & Derenne.

ATHENS.
George A. Kurtz.
ATTICA.
Robert Armitage.
J. H. Willey.
ATWATER.
H. H. Woolf.
AUGUSTA.
D. H. Hunter.
RAINBRIDGE.
I. Ingle & Son.
BARBERTON.
Barberton Hardware Company.
Johnson Hardware Company.
W. F. Miller & Son.
BASIL.
J. M. Weaver.
BEACH CITY.
E. J. Schlafly.
BEAVERDAM.
C. C. Heller.
BEDFORD.
H. A. Seldel & Co.
BELLAIR.
S. O. Cummings.
McVey Hardware Company.
BELLBROOK.
S. W. Sullivan.
BELLE CENTER.
Stephenson & Porter.
BELLEFONTAINE.
J. W. Hamilton.
Milligan & Orr.
Moore & Son.

BRADFORD.
M. C. Boyer.
BROADWAY.
W. S. Fogle.
BROOKLYN.
W. A. Rehburg.
BROOKVILLE.
Kleping Hardware Company.
BRYAN.
Bentlet & Wagner.
Bryan Hardware Company.
BUCKEYE CITY.
D. S. Workman.
BUCTRUS.
E. Blair.
D. Picking & Co.
F. A. Walther.
BURKETTSVILLE.
George Van Den Bosch.
BURTON.
H. W. Cowie.
BUTLER.
Guselman & Bone.
BYESVILLE.
W. H. Lehmer.
CADIZ.
Brown & Co.
CALEDONIA.
A. Irey Harrison.
CALDWELL.
J. E. Smith.
CAMBRIDGE.
Carlisle & Grimes.
Orme-McMahon-Thompson Co.



C. S. JOHNSON.

CAMDEN.
J. E. McCord.
CANAL DOVER.
Brucks & Adams.
G. B. Deardorff & Son.
CANAL WINCHESTER.
R. W. Bolenbaugh.
CANFIELD.
Manchester Company.
CANTON.
J. A. Besire.
Canton Hardware Company.
F. A. Coldren.
Frank R. Piper.
L. E. Skelton.
CAREY.
Cossagrey & Ash.
CARDINGTON.
Ruhlman & Miller.
CARROLLTON.
H. J. Richards & Co.
Tope & Beamer.
CHESTERHILL.
Clark Patterson.
CHESTERVILLE.
E. E. Purdy.
CEDARVILLE.
C. M. Crouse.
CELINA.
Kreusch Hardware Company.
J. Z. Riley.
CHILLICOTHE.
Chillicothe Hardware Company.
Spentagle Hardware Company.
Wissler Hardware Company.
CINCINNATI.
Boebinger Hardware Company.
Fellers & Wuenker.
George Hartke.
F. Heommelmeyer.
Charles Kobman.
Krause & Bahlman Hdw. Co.
Kruse Hardware Company.
William F. Loesch.
A. E. Lindeman.
George B. Meyer.
G. G. Orr.
Pickering Hardware Company.
E. Thethang.
CINCLEVELLE.
J. M. Morris.
CLEVELAND.
W. O. Cleveland Company.
F. B. Cowley.
H. W. Leutkemeyer & Son.
Lockwood-Taylor Hardware Co.
McIntosh Hdw. Corporation.
John M. Millard.
Mitchell Bros. Company.
John Mullen.
L. M. & L. A. Osborn.
F. M. Potter.
Julian Schwertner.
J. Wiley Smith.
Henry Stohlman.
Geo. Worthington Company.
CLINTON.
C. D. Smith.
CLIDE.
C. W. Arner.
D. B. Waldron.
COLDWATER.
Rathway & Hoying.
Jacob Willhoff.
COLLEGE CORNER.
Moor & Moor.
COLUMBIANA.
F. P. Ford.
Greenamyer & Lehman.
H. A. Keller.
COLUMBUS.
Blackwood, Green & Co.
W. R. Calkins & Bros.
Columbus Hardware Company.
S. F. Deema.
Elliot & Harris.
Mayer & Guthke.
Muthhoff Hardware Company.
Schoedinger, Fearn & Co.
J. H. Slack.
Smith Bros. Hardware Co.
C. A. Upham.
D. L. Williams Hardware Co.
COLUMBUS GROVE.
Williams Bros.
COLLINWOOD.
Skinner & Richards.
CONESVILLE.
Adams & Vinset.

CONTINENTAL.
Keck & Simon.
CORNING.
Carrison & Carran.
D. M. Rogers.
COSHOCOTON.
B. Worth Ricketts.
Gray Hardware Company.
CRESTLINE.
R. & H. Holcker.
Miller Bros. & Tuttle.
Strauch Bros.
CRIDERVILLE.
R. E. Speas.
CUSTAR.
Jos. Drummer.
CUYAHOGA FALLS.
L. W. Loomis Hardware Co.
John H. Walker.
DANVILLE.
Hall Bros.
DAYTON.
John F. Baker.
P. E. Coffman.
Adam Betch.
P. Binkley.
W. D. D. Black.
H. H. Bodey & Co.
F. Hamburger.
C. L. Kimmel.
Kramer-Vict Company.



JOHN F. BAKER.

Lowe Bros.
J. H. Robinson.
Roney & Shearer.
A. H. Schaefer.
Stark & Weekesser.
DEERFIELD.
Smith & Co.
DEERSVILLE.
H. C. Poulson.
DELAWARE.
F. B. Karl.
DE GRAFF.
Foulk Bros.
DELL ROY.
S. W. Snee.
DELPHOS.
Delphos Hardware Company.
DELTA.
F. Briggs & Sons.
DETROIT.
F. J. Pemberthy.
DEXTER CITY.
E. L. Hutchinson.
DOVALL.
Frank S. Baud.
EAST LIVERPOOL.
M. W. Elliott & Co.
Milligan Hardware & Supply Co.
A. W. Watson.
EAST PALESTINE.
D. S. Smith.
EAST ROCHESTER.
Morris Taylor.
EATON.
Royer, Allison & Sons.
Willson Hardware Company.
EDON.
Edon Hardware Company.
Andrew Kuster.
ELDORADO.
Sherman & Billman.
ELMORE.
Babbling-Landers Company.
Jaeger Hardware Company.
ELWOOD PLACE.
David Kohlstall.
ELYRIA.
Hubert Day.
Elyria Hardware Company.
Heldmeyer Hardware Company.
EVANSPOUT.
T. E. Shuter.
FARMERSVILLE.
Kurtz & Co.
FAYETTE CITY.
Baldwin & Wilson.
FAYETTESVILLE.
Conrad & McCaffrey.
FINDLAY.
Brobst, Askam & Eckart.
Gassman Bros.
Phillips & Thomas.
FOREST.
Mapletoft & Ernst.
FORT RECOVERY.
J. A. Meindering.

POSTORIA.
D. R. Balmer.
FRANKFORT.
R. W. Briggs.
W. D. Vorhees.
FREDERICKTOWN.
Frizzell Hardware Company.
FREMONT.
Gast & Long.
Swint & Reinick.
William P. Vrooman.
FULTON.
Alfred L. Pipes.
GALION.
Resh Bros. & Casey.
GALLAPOLIS.
Womeldorf & Thomas.
GARRETTSTOWN.
C. M. Bundy.
C. E. Smith.
GERMANTOWN.
A. E. Enerick.
GETTYSBURG.
B. M. Clark Hardware Co.
GIBSONBURG.
J. H. Tebbe & Sons.
GIRARD.
E. E. Zeller.
GRAFTON.
A. Ruder.
GRAND RAPIDS.
W. K. Evans.
GRANVILLE.
Geach & Son.
GREENFIELD.
D. L. Le Fette.
GREENVILLE.
L. H. Dohm.
J. P. Duffy.
Horn Bros.
Pierson & Reid Hardware Co.
Ross Supply Company.
Wolf & Craig.
GROVE HILL.
Shisler & Zimmerman.
GROVEPORT.
Carruthers Bros.
HAMAR.
W. H. McKee.
HAMILTON.
Hamilton Supply Company.
Held, Phillip & Son.
Holboch Hardware Company.
Ed. C. Moebus.
A. Rothwell.
John S. Spoerle.
HANOVERTON.
C. E. Sinclair.
HARRISBURG.
F. C. Chamberlin.
HARRISON.
J. C. Bevis.
W. W. Davison, Jr.
HARTSVILLE.
Carper & Gehman.
HERRING.
E. L. Burbin.



FRANK A. BARE.

HERROD.
T. W. Bodell.
HICKSVILLE.
Ferris & Culler.
HOLLANDSBURG.
Wolf Hardware Company.
HOSKINS.
Witte & Co.
IRONTON.
East End Hardware Company.
JACKSON.
Jackson Hardware Company.
JACKSON CENTER.
Earl Supply Company.
JAMESTOWN.
George B. Oldham.
Weckersham Hardware Co.
JENERA.
Smith Hardware Company.
JEROMEVILLE.
Carl Hardware Company.
JOHNSTOWN.
C. Frederick Russell.
KANSAS.
I. W. Cookson.
KENNINGTON.
Frank Braddan.
KENT.
Geta Bros.
J. C. Gigger.

KENTON.
Cantwell, Kingsley & Elder.
John P. Fink.
Lehman & Waganer.
KILGORE.
M. James.
KINGSVILLE.
C. M. Peck.
LAKE.
W. H. Nees & Son.
LAKE VIEW.
L. E. Halbroth.
F. E. Leatherman.
LANCASTER.
Jos. H. Goldcamp.
MacCracken Hdw. & Imp. Co.
Frank Winter Hardware Co.
LA RUE.
Peters & Campbell.
Charles Stahl.
LAURA.
L. Pilkington.
LEBANON.
J. W. Lingo.
LEETONIA.
Spatholt Bros.
LEWISTOWN.
J. T. Miller.
LEWISBURG.
E. T. Wenger.
LEWISVILLE.
L. E. Stegner.
LEXINGTON.
Kell Bros.
LIMA.
Cover Hardware Company.
J. J. Ewing.
Gilmore Hardware Company.
Penny & Penny.
T. R. Jones & Son.
LISBON.
M. C. Alton.
P. M. Armstrong & Son.
LODI.
C. M. Fullerton.
LOGAN.
Pleukharp & White.
LONDON.
Anderson & Ganschow.
Dwyer Bros.
Speasmaker & Sons.
M. M. Thomas.
LORAIN.
City Hardware Company.
Gemeler & Son.
LORAINES.
J. D. Inderriden & Co.
LOUDONVILLE.
Spreng Hardware Company.
LOVELAND.
A. B. Brock Company.
M'COMB.
Martin & Weinland.
MC CONNELLSVILLE.
W. P. Scott.
MACON.
Macob Hardware Company.
M'CONNELLSVILLE.
M. A. Griffith.
MAGNOLIA.
W. W. Farbor.
MALTA.
Malta Hardware Company.
MALVERN.
J. M. & W. E. Robertson.
MANCHESTER.
C. E. Kirker.
MANSFIELD.
Bare Bros.-Martin Hdw. Co.
Wagner Hardware Company.
MARION.
H. A. Armann.
Marion Hardware Company.
Ryan & Burke.
Thibaut Bros.
MARSEILLES.
S. Buckingham & Sons.
MARTINS FERRY.
Howard Long.
MARYSVILLE.
Church Bros. & Weld.
Emmert & Conrad Company.
MASSILLON.
Hemperly Hardware Company.
Hawk Hardware Company.
Charles E. Oberlin.
MECHANICSBURG.
Burg Hardware Company.
Hunter & Osborn.



A. L. SHEARER.



GEO. M. GRAY.

MENDON.
Copeland & Murlin.
MERIDIAN.
J. B. Murner.
MIAMISBURG.
Fanning Bros.
MIDDLEBRANCH.
E. M. Hershey.
MIDDLE POINT.
G. E. Pfarr.
MIDDLETOWN.
C. C. Fouts.
MILFORD.
Milford Hardware Company.
MILFORD CENTER.
Robinson & Richter.
MILLERSPORT.
Spitler Bros.
MINERAL CITY.
Mineral City Hardware Co.
MINERVA.
Grunder & Watson.
N. J. Smith.
MINGO JUNCTION.
Risher & Smith.
MINISTER.
Kramer & Haverbeck.
MONTPELIER.
A. P. Rothenberger.
MORROW.
E. R. Grim.
MOUNT GILEAD.
Holt & Buxton.
Tallmaga Mell.
Wilson & Mathews.
MOUNT HEALTHY.
Jacob Fink.
MOUNT VERNON.
Bird Bros.
Bogardus & Co.
MOUNT VICTORY.
Dickman & Wallace.
MURRAY CITY.
T. A. Castell.
NAVARRE.
Zinsmaster & Fisher.
NEVADA.
Kuenzli Bros.
NEWARK.
John E. Dean.
Elliott & Wilson.
NEW BERLIN.
D. W. Strausser.
NEW BREMEN.
C. J. Boesel.
NEW BURLINGTON.
Wayne Smith.
NEW CARLISLE.
Isaac Ullery.
NEW MADISON.
Brown Bros.
G. W. Wiley.
NEW PHILADELPHIA.
H. P. Fribley.
John Geiser & Son.
New Philadelphia Hardware Co.
G. A. Schlegel.
O. P. Taylor & Son.
NEW SPRINGFIELD.
H. O. Brown.
NEWTON FALLS
J. B. Beard.



C. C. FOUTS.

Grinnell & Borland.
NEW WASHINGTON.
T. J. Miller.
S. E. Villard.
NILES.
Bach Hardware Company.
J. S. Eaton.
Manchester Company.
NORTH AMHERST.
J. H. Frederick.
NORTH BALTIMORE.
H. D. Stauffer.
NORTH JACKSON.
Friend Jones.
NORTH STAR.
F. W. Leubking.
NORWALK.
Whitbeck & Jefferson.
OAK HARBOR.
G. H. Bredbeck.
John P. Vogle.
OAK HILL.
J. D. Jenkins.
OAKWOOD.
Martin E. Bidblack.
W. M. Kirkendell & Son.
OBERLIN.
J. M. Waterman.
Watson & Thompson.
OEVILLE.
Eckelman & Bechtol.
OSBOENE.
F. C. Massey.
OTTAWA.
E. L. Frey.
C. C. Williams & Son.
OXFORD.
F. H. Gerrard.
PAINESVILLE.
G. W. Blackman & Sons.
Doolittle Bros.
PAULDING.
M. Finan.



JOHN C. FUHR.

PEMBERVILLE.
Hobart, Bolus & Co.
William Kell & Son.
PETERSBURG.
Kneasel Bros.
PHILIPSBURG.
Kessler Bros.
PIONEER.
William M. Harley.
A. E. Quidort.
PIQUA.
Angle Hardware Company.
Woodcox & Son.
PITTSBURG.
F. F. Saxon.
PLAIN CITY.
Barto & Kelsner.
W. H. Haner.
Howland Bros.
PLEASANT CITY.
M. L. Hickie.
POMEROY.
Skinner Hardware Company.
PORT CLINTON.
Miziner & Orth.
PORTSMOUTH.
Central Hardware Company.
A. M. Glockner.
Frank A. Glockner.
F. M. Knauss.
Somner Bros.
PORT WASHINGTON.
C. Wland.
POWELL.
A. E. Sharp.
PROSPECT.
Cummings & Court.
B. K. Herbster & Son.
QUAKER CITY.
William H. Hartley & Sons.
RAVENNA.
Gilbert Bros.
M. Waller Company.
REPUBLIC.
Wyant & Hilsinger.
ROSCOE.
James Bell.
ROSEVILLE.
A. M. Leach.
SALEM.
A. M. Carr & Son.
Salem Hardware Company.
SALINEVILLE.
J. S. Duncan.
W. H. Kinter.
McGonagle Bros.
SANDUSKY.
Donahue Hardware Company.

SARDINIA.
W. L. Felke.
SEBRING.
Leopard Hardware Company.
SHELBY.
Armstrong & Rauch.
Drake Hardware Company.
H. G. Morton.
SHERVE.
Carl Bros. Company.
SIDNEY.
James Rostrom.
SOMERSET.
C. E. Love.
SPARTA.
E. G. Coe.
SPENCERVILLE.
Charles Pohlman.
SPRINGFIELD.
J. George Haucke.
Lyon Hardware Company.
Springfield Hardware Company.
STROUTHERS.
A. D. Allen.
STURENVILLE.
Stubenville Hardware Company.
Weir & McClare.
SULPHUR SPRINGS.
Rader & Co.
SUNBURY.
Wheaton & Cockrell.
SWANTON.
L. D. Boyer.
Reginald & Merrell.
SYCAMORE.
John Wensinger & Son.
THORNEVILLE.
Shelby Bros.
TIFFIN.
Crosbaugh-Dahn Hardware Co.
C. N. Moore.
Park Bros.



F. W. INGALLS.

TOLEDO.
Bostick-Braun Company.
C. D. Clapp.
G. B. Clayton.
E. A. Everman.
Merrell & Co.
R. P. Searle.
Shunk-Marquardt Company.
Star Hardware Company.
Stollberg Hardware Company.
Charles F. Thorne.
Wolf Hardware Company.
J. W. Weldon.
TORONTO.
Stewart Hardware Company.
Toronto Hardware Company.
TROY.
Coles, Schaible & Smith.
H. A. Cosley.
Hatfield & Scott.
UPPER SANDUSKY.
Herman Von Blou.
URBANA.
Hardware Supply Company.
Stone Bros.
URICHVILLE.
O. W. Latto.
UTICA.
C. W. Jewell.
VAN WERT.
F. H. Clark.
VENEDOCIA.
G. D. Haas.
Jones & Jones.
VERMILLION.
W. E. Bailey.
G. H. Blattner.
VERSAILLES.
H. H. Peschke.
Jos. Manier.
VINCENT.
Turner & French.
WAPAKONETA.
Fisher Hardware Company.
May & Wilson Hardware Co.
WARSAW.
Strome Bros.
WASHINGTON C. H.
Ford Hardware Company.
McVey-Glasscock Hardware Co.
WASHINGTONVILLE.
J. E. Gilbert.
WATERFORD.
Waterford Cash Hardware Co.
WAUSEON.
E. W. Blizzard & Co.
C. E. Brigham.
WAVERLY.
L. F. Stahler.



C. W. JEWELL.

WAYNESBURG.
John L. Brown.
R. R. Jacobs & Co.
WAYNESFIELD.
W. R. Green.
WAYNESVILLE.
Cross Bros.
A. B. Sides.
WELLINGTON.
A. H. Pierce.
Ransom-Bachman Company.
WELLSTON.
R. W. Goddard.
WELLSVILLE.
P. H. White & Son.
WEST ALEXANDRIA.
J. E. Davis.
Roselin & Ehler.
WESTERVILLE.
W. C. Bale.
Wilkin, Landon & Patrick.
WEST FARRINGTON.
N. T. Walker.
WEST FARMINGTON.
W. T. Walker.
WEST JEFFERSON.
James Gillivan's Sons.
WEST LIBERTY.
Dills Bros.
M. S. Yoder.
WEST MANCHESTER.
Charles A. Ford.
WEST TOLEDO.
J. D. Conway.
WEST UNION.
L. L. Edgington.
WHITEHOUSE.
M. Goodman & Son.
WILMINGTON.
J. W. Sparks.
D. C. Wood.
WILLIAMSBURG.
J. C. Fuhr.
WOOSTER.
Wooster Hardware Company.
WOODSFIELD.
Ludge & Egger.
Woodsfield Hardware Company.
WOODVILLE.
William Kell.
Kuhlman Hardware Company.
WORTHINGTON.
J. F. Wright.
WREN.
Myers, Cully & Co.
YELLOW SPRINGS.
M. A. Oster.
George H. Smith.
YOUNGSTOWN.
Dingledy Bros.
Gluck-Spatholt Hardware Co.
John Henne.
T. J. Lawlor.
Morris Hardware Company.
Perkins Bros.
Stambaugh-Thompson Company.
Wilkin Leonard Hardware Co.
William Willing.
ZANESVILLE.
T. C. Berkshire & Son.
Willis E. Lumb.
Union Machine Company.
Y Hardware Company.
ZENIA.
J. C. Conwell.



GEO. HARTKE.

Minnesota Retail Hardware Association.

MINNESOTA retail Hardware merchants, 500 strong, gathered in Minneapolis last week to attend the tenth annual convention of the Retail Hardware Association of that State, which was held at the Hotel Nicollet on February 28, March 1 and 2. The unbounded enthusiasm displayed at the meetings of similar organizations in sister States already held prevailed throughout the gathering, and the animated discussion of all subjects of vital importance to the trade was another manifestation of the great interest that is being shown by the merchants in their efforts to solve the important problems with which they are confronted. The lengthy programme was replete with papers and addresses on practical subjects and the following discussions were of the utmost value to the merchants.

Governor Johnson's Address.

That the catalogue house question is receiving political consideration in the State of Minnesota is indicated by the address made by Governor John A. Johnson, whose remarks showed that he was thoroughly alive to the dangers lying before the retailer as a result of the development of the mail order trade.

Anticatalogue House Plan.

H. M. Clark, a Hardware merchant at Lakefield, Minn., outlined a plan by which the merchants in his community have successfully solved the catalogue house question, and shipments to farmers and other consumers in their community from concerns doing business outside of the State have fallen off almost entirely, although previous to the adoption of this plan the shipments from mail order houses constituted 47½ per cent. of the freight received. When they were confronted with a gradually decreasing amount of trade an association was formed, composed not only of the Hardware merchants of the town and the immediate vicinity, but grocers, dry goods merchants, druggists and all other retailers.

As the community is located in the center of a large agricultural and dairy district the merchants were compelled to purchase produce from the farmers, and in turn sold the same to dealers or made shipments direct to the large cities. The farmers upon being asked their reason for sending orders to outside concerns informed the association that their prices were entirely too high and that unless their values would be considerably lowered they would continue to do business elsewhere. The association then decided to discontinue purchasing produce and incorporated a company with a capital of \$25,000, which built a large storage house.

ALL OF THE PRODUCE

brought to Lakefield either had to be sold to this concern or to outside dealers, but inasmuch as the facilities of the Storage Company were so much better than those of the traveling commission merchants better prices could be paid, with the result that most of the produce is sold this company, which in turn makes carload shipments to points East and West. Metallic checks redeemable at the stores of any of the merchants members of the association are issued in payment for the agricultural and dairy products, and as a result of the increased trade that is coming to the merchants much lower prices can be made than were heretofore prevailing. Furthermore,

THE MERCHANTS ARE PLEDGED

not to purchase either clothing or household effects from mail order concerns, and even the women have taken up the fight and are largely purchasing wearing apparel in their own town in preference to going to neighboring States, where probably a larger assortment could be drawn upon.

This plan elicited the keenest interest and Mr. Clark was asked many questions as to its success. He said that the farmers are perfectly satisfied, inasmuch as the checks are issued in lieu of currency and they are receiving higher prices for their produce than ever before. During one year the Storage Company sold \$65,000 worth of produce,

which represents fairly well the amount of business that has been recovered by the merchants and which previously went to outside concerns. Only one tradesman is outside of the association, and Mr. Clark explained that he attempted to issue metallic checks on his own account, but that the plan did not prove successful. He added further that they were satisfied to have him out of the organization, inasmuch as it was not entirely desirable to eliminate all competition.

President's Address.

The presidential address of A. T. Stebbins of Rochester was an interesting and able one. It was, in part, as follows:

We must all realize that the business methods of yesterday are not the methods of to-day. A constant change is taking place, and as the individual tries to keep pace with this evolution and the conditions that follow mammoth combinations of capital and brains he must of necessity realize that the situation demands constant and determined effort aided by progressive thought. Do I hear some one ask, What can this association do as against these combinations, entrenched as they are behind untold wealth? My answer is to keep digging and improve our opportunities as best we may and results will follow.

I once heard a minister say that the greatest thing in life is opportunity. If we improve the opportunity of to-day, while the pendulum seems to be swinging farther and farther away, who knows but what something said or done during this meeting may hit a responsive chord throughout the length and breadth of this land that will cause the pendulum to swing to the other extreme and we may receive a lasting benefit thereby?

PROGRESS OF A DECADE.

When we organized ten years ago those of us who were there little dreamed of the progress that would be made in a decade. We had no National Association, as we were among the first to organize. Now more than half the States in the Union have Hardware associations and are affiliated with the National. And right here let me say that while Minnesota is now in the lead in point of numbers, we must look well to our laurels, as we are being closely pressed. Within another decade I expect to see a Hardware organization in every State, when by co-operating with other similar bodies we can easily make our influence felt. Ten years ago the jobbers were not with us. To-day the jobbers and retailers are working hand in hand. Within the next ten years, instead of having about 400 manufacturers friendly to us, I expect they will all be our friends.

WE OCCASIONALLY HEAR CRITICISM

from Hardware merchants to the effect that our organization has accomplished nothing; that we meet annually, pass resolutions, go home and forget them, and thus end our efforts. My heart ever goes out in sympathy for such a deluded merchant, and I sometimes wonder if his digestive organs are in good working order or if his appendix needs attention. I never go home from a convention without a feeling that some good has been accomplished and a feeling that I could make good use of some suggestion or brother merchant's experience, and thus to some extent, at least, be the more competent to sell Hardware at a profit. If there be such a pessimist here I would like to ask him, What have you done to help along the work? Have you offered any solution for the ills that beset us? Have you ever taken any part in the discussions? Have you even so much as dropped a question in the Question Box? Do you continue to buy goods that are quoted in catalogues at ruinous prices? Whose fault is it that we have not accomplished all we could have hoped for? Is it not your fault and mine? Have any of us been as loyal to our association as we ought?

Loyalty to ourselves, our neighbor and our country is a God given virtue, the practice of which makes the true type of American citizenship.

ASSOCIATION OBJECTS.

What are some of the objects of our association? Allow me to suggest:

1. To better the condition of the retail merchant.
2. To correct the evils that now exist.
3. To bring about better trade conditions.
4. To weed out dead beats.
5. To stop wholesalers selling consumers.
6. To encourage co-operation of manufacturers, jobbers and retailers.
7. To eliminate price cutting.

8. To restore confidence between dealers, where petty jealousy now exists.
9. To become honest with one another.
10. To encourage a more general reading of trade papers.
11. To affiliate with State and National associations.

The last proposition carried to its ultimate conclusion would solve many of the other problems. Imagine the effect of 10,000 Hardware dealers making demands on manufacturers who are now selling catalogue houses—think you they would not acquiesce?

The American people condemn the railroads for unjust discrimination for giving a favored few rebates not allowed to all, and the United States Government is trying to stop it. If manufacturers were to give a favored few jobbers rebates not allowed the many would the jobbers stand for it?

ARE NOT CATALOGUE HOUSES

who sell consumers retailers? And if manufacturers sell a few retailers at a less price than they do the many is that not equally unjust discrimination? Is the action of such manufacturers any less reprehensible than that of the railroads for resorting to like methods—and are we as retail merchants going to stand for it?

When we cut a price the demoralization is only local, but when done by a catalogue house the effect is general and covers the entire country and every merchant suffers in consequence. The key to the solution of this question then is in the hands of the manufacturer and we are losing money by patronizing manufacturers who sell catalogue houses.

We are living in a day of unprecedented prosperity. Crops, generally speaking, were bountiful the last year; railroads have reaped a harvest and our manufacturing institutions are active. Every other interest seems to have enjoyed a larger degree of prosperity than the retail merchant. This is not as it should be. A country to be truly prosperous should see to it that all its interests are prosperous. If one branch suffers, the whole must necessarily be unfavorably affected. How would the commercial interests of the Twin Cities be affected should the smaller cities and villages of the State be wiped off the map?

VICIOUS LEGISLATION.

There has been and is to-day proposed legislation that seems to be aimed solely against the retail merchant. Your president has in the name of this association carried on quite an extensive correspondence relative to the Post Parcel bill.

By reason of the active and hearty co-operation of allied organizations action on this matter has been for the present deferred. The introduction of the Henry bill, providing for the carrying by mail to any part of the United States of 200 pounds for 25 cents, forcibly reminds us that we must ever be on the alert and continue our fight against this proposed outrage. The order of the United States Post Office Department regarding the numbering of rural mail boxes was temporarily suspended by reason of organized effort. If by reason of organization we have prevented action in these two cases have we not justified our existence?

BE LEADERS

in organizing local associations. Assist in educating your customers in building up their home towns. Endeavor to show them that you can serve them better than catalogue houses possibly can. Write your member of Congress upon any question pertaining to your interest. One letter is worth more than a lengthy petition. Speak to your members of our State Legislature upon State matters. Converse freely with our friends the traveling men, who are always in possession of a fund of information. Procure copies of mail order house catalogues, study them carefully and learn of their methods. While these catalogues are a menace to the trade I am firmly of the belief that when we become more thoroughly organized through local, State and national associations the combined wisdom of the progressive merchants of the country will minimize the evils that now confront us to a greater extent at least than many now fear.

Secretary Mathews' Report.

The annual report of M. S. Mathews, secretary, showed that the association had a paid up membership of 700. The report was as follows, in part:

With the constantly increasing numerical strength of this organization the grievances, or at least the reports of them to reach this office, appear to be falling off in an inverse ratio to the lengthening of the membership roll. Two of the complaints were caused by a misunderstanding of the facts, and on an explanation of the same were dropped. At the present time there is only one case undisposed of and this awaits further information from the aggrieved party.

THESE IMPROVED CONDITIONS

come, doubtless, from a clearer understanding between manufacturers, jobbers and retailers. Another feature of the movement is the broadening of the work through the efficient methods of the National Association and the Joint Catalogue House Committee, whose efforts are accomplishing much toward securing more desirable conditions for the retailer. The improving of trade conditions through organized effort are so well understood in this State that in Hardware circles the association non-member is now the exception instead of the rule. While it is probably true that many remain members for the insurance benefits it is equally true that a large percentage are members from a love of the cause and a belief that only through organization can trade conditions be permanently improved. As showing that this position is correct, it only need be stated that barely 65 per cent. of this association's members carry insurance with the Minnesota Retail Hardware Insurance Company.

MORE THAN 700 MEMBERS.

At the last annual meeting a paid membership list of 644 was presented. While the increase the past year has not been so marked the growth has been steady and continuous, the printed list showing 688 names. These, with later additions since the book was given to the printer, enable Minnesota to retain first place among Hardware associations with a following of 702 members in good standing.

Mr. Mathews furnished the figures concerning receipts and disbursements during the year, showing that the balance in the hands of the treasurer was \$653.04.

Things to Think About.

A suggestive and entertaining address was that by J. F. McGuire of St. Paul, whose topic was "Things to Think About." Mr. McGuire referred to a number of matters worthy of attention at the hands of those present, both individually and as an association.

Smoker.

Preceding a smoker held Wednesday evening S. R. Miles of Mason City, Iowa, gave an illustrated lecture on the catalogue house question, and he was followed by Conway McMillan on "Factors of Modern Advertising." Leon C. Warner, president of the Minneapolis Retail Hardware Association, presided.

Mutual Fire Insurance.

The Thursday morning session was preceded by the annual meeting of the policy holders of the Minnesota Retail Hardware Mutual Fire Insurance Company. President Charles F. Ladner of St. Cloud presided. He made an interesting address, from which we give the following extracts:

Three-fourths of the fire losses which we have paid during the existence of our company have been caused by fire originating in buildings adjoining those on which we held the risks. This proves not only that Hardware stocks are less hazardous than most all other risks but also that Hardware men as a rule seem to be more careful in keeping their premises and stock in such condition that fires are not so apt to occur. Why not extend the same vigilance to some of your neighbors? I would therefore urge you to call the attention of your grocery neighbor to the fact that the ashes from his heating plant and the rubbish from packing and unpacking goods are not properly taken care of. Tell the dry goods man that some of his goods hang too close to his lamps. Let the druggist know that it is dangerous to go into the basement with an open lamp where alcohol, benzine and gasoline are kept. Inform your milliner of the risk she takes when she tries on a hat or curls her hair too near a gasoline stove.

ANOTHER SOURCE OF GREAT LOSS,

and I believe one of the greatest, is incendiarism. It behooves all of us to be more vigilant in watching and trying to prevent this class of losses.

Another source of improvement, and one which would reduce our losses considerably, would be the introduction of a better system of keeping books. It is surprising to find how many merchants are careless in caring properly for their inventories. Others again do not carry any merchandise account, so that if a fire loss does occur they have no proof as to the amount of goods bought and sold and no system by which they can arrive at the amount of goods on hand.

Hardware mutual insurance companies were not organized solely for the purpose of saving money for their policy holders, but to put the means in the hands of every individual member to assist in furthering the interest of association work. Too many dealers cannot see the ben-

efits they receive indirectly by belonging to an association unless it is paid to them in cold cash. To these I would say the real purpose for forming a mutual fire insurance company was to obtain means to continue this good work of the Hardware associations and to keep the members interested in this work.

In his report Secretary of the Company M. S. Mathews reviewed the work of the year. He said that the return premium since January 1 had been 40 per cent., which has brought about a large increase in applications for insurance. A statement of the condition of the company December 31 was presented, following which Mr. Mathews said:

The season of severe cold weather has been passed through with moderate losses of but 25 per cent., thus giving a much better start than in the corresponding period of 1905. The success of this company has been so marked that students of the insurance problem have carefully noted its growth and many inquiries are received as to its methods. Were this the only company making so favorable a showing its record would cause more extended comment, but, as a matter of fact, similar companies in neighboring States are making equally good progress, all of which tends to show that for a Hardware merchant the solution of the insurance problem lies through the "Hardware Mutuals." One question arises, with an insurance company of your own a demonstrated success and making such remarkable savings why is it only favored with insurance business from 65 per cent. of the members of the Minnesota Retail Hardware Association and with a total amount of Minnesota insurance in force December 31 of but \$1,359,000?

We would ask you to study the figures as presented by this company and consider that with an increased volume of business comes lower cost of insurance. Forty per cent. of your insurance expense is a large saving, but the seven years' experience of this company points to still better results in the future.

The statement of Treasurer H. Hauser showed the company to be in a very flourishing condition.

State Insurance Commissioner Thomas O'Brien talked briefly to the policy holders and informed them that their company was one of the strongest mutual fire insurance companies in the State. He called attention to the dangers that confront their company if it grows too large, and in conclusion stated that it was only through the mutual fire insurance companies that reasonable rates could be secured on risks from stock companies.

Greeting from Manufacturers' Association.

W. R. Libhart, representing F. S. Kretsinger, president of the American Hardware Manufacturers' Association, read a letter from Mr. Kretsinger which was substantially the same as that presented at the convention of the Illinois Retail Hardware Association published in *The Iron Age* last week.

F. W. Hurty's Paper.

F. W. Hurty of the Hurty-Simmons Hardware Company, Minneapolis, read a paper on "Successful Retail Hardware Merchants from the Jobber's Point of View," in part as follows:

Some twenty years ago I entered the employ of a jobbing house in this State as a traveling salesman. At that time I was young and ambitious. I had a great many offers to go into the retail business, but the more I considered the question the more difficult it seemed to me. The retail Hardware merchant, as a rule, does his own buying, his own selling, is his own bookkeeper, cashier and credit man. I do not know of any business where so much real talent and ability is required by one person. The more I studied myself the more I was convinced that I did not possess the ability that was positively necessary to make a success of the retail Hardware business.

In these 20 years of business in the State of Minnesota I have seen a great many merchants come and go, but it is a great pleasure, I assure you, to know that so many have stayed and made an honorable success of their work. These highly successful ones present a combination of ability and morality that would make them successful, and highly so, at anything they might attempt, for they are all good buyers, good sellers and good collectors. It is the combination that wins.

IN A WHOLESALE HOUSE

the man that buys is not supposed to have any ability as a seller, and the man in charge of the selling would

be expected to make a mess of it if he tried to do both the buying and the selling, and the credit man is like the villain in the play—he has the unthankful part, both with the house and with the trade. If he is not a good collector he loses standing with the house. If he is an extremely close collector in a short time he is unpopular with the trade. But the retail merchant who is compelled to be his own buyer, seller and collector necessitates qualifications of a much higher order than in most any other branch of business.

In analyzing the successful merchants of Minnesota with whom I have been in intimate contact for many years I find them to be strong in selling and strong in collecting, and while they are not weak in buying by any means they give the selling and collecting end of their business the greatest part of their attention and in buying they avoid speculation—that is, they seldom overbuy, but they order frequently, and in such quantities as they really need.

THE JOBBER SHOULD DO

all in his power to assist the retail merchant, not to be satisfied with simply selling him goods and collecting his money, but help the merchant dispose of his goods, which can be done by supplying him with printed matter, set advertisements, electros, hangers, price cards, and in many other ways. Here is where the intelligent salesman, makes himself of service to his customer. Much good advertising matter is relegated to the ash heap for lack of interest or understanding on the part of the merchant.

THE BRIGHT SALESMAN

will not only bring it to the light, but make it clear to the merchant how to benefit by using it. The salesman can also keep his customers informed generally of plans and methods that he knows have been used advantageously by other dealers. The average merchant receives so much printed matter and so many letters through the mail that he does not find it easy to separate the good from the bad.

The live salesman who really represents his house will take a

PERSONAL INTEREST

in his customers, and the jobber who really has the interests of the trade at heart will do all he can in every legitimate way to build up his customers and make them independent of financial favors.

The jobber who depends principally on financial favors to hold trade shows a lack of confidence in his goods, service and prices. The retail merchant who is entirely dependent on a jobber for financial accommodations is not likely to be on an equal footing with his neighbor, to say nothing of attempting to compete with our arch enemy, the catalogue house, which buys and sells for cash.

Scientific Salesmanship.

A. W. Crozier of the National School of Salesmanship, Minneapolis, gave an interesting talk on "Scientific Salesmanship," in which he called attention to the art of selling goods at profit.

Handling Paints.

On Thursday afternoon S. R. Miles of Mason City, Iowa, read a paper on "Practical Paint Salesmanship," as follows:

Should a Hardware merchant handle Paint?
What kind of Paints should he handle?
What methods should he employ in selling?

In my opinion every Hardwareman should handle Paint for the simple reason that Paint in reality is a part of the business. Anything that can be classed in with Builders' Supplies belongs to the Hardware store, and surely all kinds of Paint products come under that head.

Paint is bought and used by the kind of people that the Hardwareman is in touch with. Builders, contractors and carpenters are in our stores after other material. They influence the sale of a great deal of Paint, and surely it is just as easy for the painter and the property owner to go to the Hardware merchant as anywhere else.

In addition to this, the Hardware merchant usually knows when an old house is going to be repaired or a new house going to be built. This information can be of value to him in selling a bill of Paint.

IT IS TO THE INTEREST

of the Hardware merchant to sell Paint, because in these days of strenuous competition everything must be made to count. If the Paint business is handled correctly it will afford the merchant a satisfactory profit; but that is not all. I have found by experience that a line of Paint has some peculiarities that are attractive in themselves.

A man may sell a bill of Hardware, a Stove or a Corn Planter without making much noise, but when he

sells a bill of Paint he cannot help making noise, and if he is handling a good Paint, a Paint that will give his customer satisfaction, this bill of Paint will be a monument, a standing advertisement in his locality. Every neighbor will see it, notice it and will be almost certain to ask the buyer what kind of Paint he used on his house and where it was bought. I am of the opinion that it is well worth the Hardware merchant's while to sell a line of Paint, if it were only for the advertising he will get from it.

Now comes the question as to the

KINDS OF PAINT

the Hardwareman ought to handle. Those of us who handle Paint have our individual preferences and ideas. I will simply state the matter from my own standpoint.

In my opinion the Paint situation can be summed up in a very few words. The dealer is anxious to sell Paint and sell it for a profit. He must sell either White Lead or Mixed Paint. To sell White Lead means to do business without either profit or prestige. Any one and every one can buy lead, and consequently it is not to his interest to sell it, and the question with him is, "What can I sell my customer that will yield me a profit and at the same time be of benefit to him?"

I believe there is only one way out of it, and that is to sell good Mixed Paint, the very best that can be had and nothing else. The merchant who invests his capital and works hard to build up a trade on Mixed Paint that is in any way inferior is like the man in the Scriptures who "built his house upon the sand." He is laying in a stock of trouble that will surely return to plague him at some future day. He is trying to accomplish the impossible. He is trying to displace strictly pure, Hand Mixed Lead and Oil with a Mixed Paint that is not strictly pure. He is trying by his actions to persuade his customers that impurity is better than purity.

This, in my opinion, is illogical, absurd and injurious to every one concerned. No permanent, successful business was ever built up with deception for a foundation, and the principal reason why Mixed Paints have a bad reputation in some communities is because so much bad Mixed Paint has been sold in these communities.

INFERIOR PAINT NEVER DID

and never will benefit any one except the manufacturer of it. It is a fraud—a trick—and is sure to injure the merchant in the long run.

The merchant must have a Paint that he is not ashamed of—something that will enable him to look his trade in the face and say: "I know this is good"—with the sincerity that carries conviction. Unless he has this confidence in his line he will fail, for you cannot impart confidence to another unless you have it yourself.

MIXED PAINT TO BE GOOD

must be just as pure and just as honestly made as Hand Mixed Lead and Oil. It should be composed of Lead, Zinc, Linseed Oil, a little Turpentine and Dryer and the necessary coloring pigments to make the different shades, and in my opinion a dealer will make a great mistake in putting in any line of Paint unless he is absolutely certain that his Paint is pure, for you must bear in mind that your principal competition will be strictly pure, Hand Mixed White Lead, and in order to successfully displace Hand Mixed White Lead you must give your customer a Paint that is just as pure, just as honestly made, and superior in other respects.

CONTROL OF THE LINES.

In buying Paint, before you do anything else, convince yourselves beyond a doubt that the Paint you buy is a strictly pure Lead, Zinc and Oil Paint, and the best or as good as anything on the market. Next to this comes the importance of securing the control of the lines of goods you intend to handle. When you have found the Paint that suits your wants as regards quality, when you are convinced that their advertising matter will be of assistance and the methods of the concern you buy from are sound, then you should insist on getting the exclusive sale and control in your territory of the full line made by the particular manufacturer from whom you intend to buy.

IT IS NOT ENOUGH

to have the manufacturer agree to sell no one else direct; he should make provision to see that none of his goods reach your community through any mail order or catalogue house, or through any other source, for if you work hard to build up a business on the line you control you ought to spare no pains to safeguard your interests and keep that line out of the hand of every one else.

To sum the whole matter up, we have the following:

1. It is to the interest of every Hardware merchant to carry Paint.
2. He should carry nothing but the best.
3. He should carry a line that is effectively advertised.

4. He should have the exclusive sale of the full line manufactured by the firm he does business with.

HOW TO SELL PAINT.

I have been asked to tell you something of my methods of selling Paint, which, with your kind indulgence for a few minutes, I will attempt to do.

Mr. Miles said that when he decided to lay in a stock of Paints he found every merchant practically selling Lead and Oil, and outside of drug stores no Mixed Paint was being handled.

To induce the prospective purchaser to accept Mixed Paint in preference to Lead and Oil some explanation and inducement had to be offered him. He pointed out that the Mixed Paint was composed strictly of Lead, Zinc, Oil, &c., and that the advantage of having it already mixed was in having the exact proportions, and with the addition of Zinc chalking, cracking, &c., was prevented, to say nothing of the gloss it gives to the finish and increased surface that it will cover.

TO CARRY OUT HIS DEMONSTRATION

he had a can of Paint with a loose top, which he said he prefers to handle, inasmuch as it can be easily opened and the contents of the can can be shown the consumer. To prove that the can contains Linseed Oil he asked the consumer to dabble his finger in the Oil and the odor of the pure Linseed Oil can readily be detected. Furthermore he said it was desirable oftentimes to hold a match in the top of the can to prove that it contains no volatile oils, such as gasoline or benzine. By stirring up the Zinc and Lead in the bottom of the can with a knife the consumer can be shown that no chalk or clay makes up any portion of the mixture, inasmuch as this will harden, while Zinc and Lead are soft and will readily mix with a little stirring. He added further that he never guarantees any Paint that he sells beyond guaranteeing its purity. No claims are made as to its wearing qualities, inasmuch as he said that he was unable to control its application.

Credits.

A. F. Rock, secretary of the Superior (Wis.) Merchants' Association, gave an interesting talk on "Credits." He pointed out to the members the necessity of credit associations in all communities and suggested that they organize not only in large towns but small ones as well. The method which he said he has introduced in many of the larger cities in Wisconsin and which has been successfully followed out provides for an association of merchants with a paid secretary to whom all reports are made in confidence. These reports are made every month, and in this way the merchant always has a comprehensive list before him of purchasers to whom no credit should be extended. After an account has been liquidated the name is removed from the list and all merchants notified and further credit can then be given. In the city of Superior he said that out of a total of 37,000 inhabitants there were 3800 names on the books, and in one year \$12,000 in old accounts were paid. In Wisconsin \$2,848,000 were the losses sustained by the merchants of that State in one year, due to bad accounts, and 978 merchants went into bankruptcy. He further admonished the retailers to take a lively interest in politics, to demand legislation in their behalf and to insist on the passage of such laws as will protect them and will enable them to collect bad accounts.

Stove Salesmen.

Chas. W. Connor of the Fuller-Warren Company, Milwaukee, Wis., read an interesting paper on the "Successful Stove Salesman," in which he pointed out some of the principal qualifications which should be possessed by the manufacturer's selling representative.

A. C. Hatch's Address.

"The Present Steel Age" was the topic of an address by A. C. Hatch, Battle Lake, in which he outlined briefly the growth of the iron and steel industry and the effect of monopolistic control.

Question Box.

The Question Box was in charge of M. L. Corey, secretary of the National Retail Hardware Association. Among the questions were the following:

What protection are we afforded by insuring in mutual fire insurance companies in other States?

Several of the officials of the Minnesota Mutual Fire Insurance Company explained that the mutuals in other States afforded the same protection as those in Minnesota; that losses were adjusted in the same manner.

How should we treat customers who buy of catalogue houses and who ask for credit or favors?

One of the members replied to this question by asking, "How are we going to expect to get their trade if we do not extend them favors?" The following discussion showed that most of the retail merchants are endeavoring to show the consumer the error of his ways in purchasing from mail order houses, and by extending favors and oftentimes credit much trade that would otherwise be lost is secured.

Secretary Corey said that in Michigan some of the merchants told the farmers who were purchasing from mail order houses to sell their produce to the same people. He, however, added that he was not in favor of such radical treatment and believed that some good could be done by granting favors and making every effort to win back trade rather than by strong rebuffs.

Does it pay to help build up the farmers' telephone system?

Most of the members believed that the rural telephone has greatly aided them and that it has increased trade rather than otherwise. While it has enabled the farmer to telephone to the various merchants to secure prices, nevertheless it has also given the merchant an opportunity of reaching the rural purchaser and of ascertaining his wants.

In what way has rural free delivery affected the Hardware trade?

Some of the merchants said that it had a tendency toward keeping the farmer at home and has kept him away from the towns. It has also facilitated the mail order business to some extent, and, taken on the whole, it is not advantageous to the merchant.

Secretary Corey then detailed a case which he is now investigating of mail order house treatment. He said that he had received a letter from a purchaser of a Stove who had paid the mail order house \$16.77 for it. With the order was a request that the Stove be sent immediately. The order was mailed on October 25 and the Stove delivered five or six weeks later, and was not set up until Christmas Day. After using the Stove for a short time it was found to be defective and the Stove was taken down and recreated, and the mail order house notified that it was waiting their disposal at the station. A request was also made for a return of the money paid for the same. No satisfactory reply has been received to the latter request beyond stating that the claim was under investigation. It is probable that suit will be commenced and an effort will be made to compel the return of the money.

St. Paul Next Year.

J. Gregg of St. Paul, representing the commercial associations of that city, extended an invitation to the association to met there next year. He explained that a large auditorium was now under erection, which would give the organization an opportunity of having its exhibits and sessions in the same hall. The invitation was accepted by unanimous vote.

New Officers.

The report of the Nominating Committee was adopted and resulted in the election of the following officers:

PRESIDENT, Julius Schmidt, Wabasha.
VICE-PRESIDENT, Amos Marckel, Perhan.
EXECUTIVE COMMITTEE.—Three years: C. H. Casey, Jordan; A. T. Stebbins, Rochester; Elmore Houghtaling, Fairmont.

The Executive Committee reappointed M. S. Mathews, Minneapolis, and G. F. Duerre, Plain View, secretary and treasurer, respectively.

Delegates to the national convention were appointed as follows: M. S. Mathews, Minneapolis; Julius Schmidt, Wabasha; H. M. Clark, Lakefield; C. H. Casey, Jordan;

F. W. Lucas, Litchfield; J. F. McGuire, St. Paul; W. H. Tomlinson, LeSueur; Elmore Houghtaling, Fairmont.

Directors of the Mutual Fire Insurance Company were elected as follows for a term of three years: Julius Schmidt, Wabasha; C. H. Casey, Jordan; J. F. McGuire, St. Paul; Amos Marckel, Perhan.

Parcels Post Legislation.

During the closing session on Friday morning Secretary M. L. Corey explained that there is no likelihood of parcels post legislation at this session of Congress along the lines laid down. To appease the merchant he said that local rural free delivery had been suggested as legislation intended to offset the parcels post, and he added that if this privilege was granted merchants would not the catalogue houses ask for the same consideration? A rising vote was demanded of all the members who believed that this would be the result and they were unanimously of the opinion that such legislation would be injurious. To offset parcels post legislation he suggested that the aid of the newspapers in rural communities be asked for, and he ventured the opinion that if the situation was properly explained the influence of these publications would be exerted against the bill.

Inland Town Decadence.

D. H. Evans of Tracy, Minn., read a thoughtful paper on the subject "Decadence of Inland Towns," in part as follows:

The foundation upon which the inland town as well as any other town rests is commerce. What red blood is to the body commerce is to the city, large or small; whatever influence or interest deprives it of its commerce deprives it of life. To prevent decay and to preserve and promote the progress of these it is absolutely necessary to protect their commerce. Within but a few years their right to existence has been challenged and they must now prove their right to such existence or perish.

THE ABILITY TO MEET ALL COMERS

In competitive commercial battle is the final test under a competitive system of the right of the individual institution or community to commercial existence. From whence cometh this challenge and what mighty force is it that proposes to—has already—enter the field and open battle to kill inland towns? Upon what food does this modern leviathan feed that it has become so strong, bold and aggressive that its opponent, once indifferent to the quiet, stealthy invasion of his province, now finds him well intrenched and forcing the fight?

Where there is an effect there must have been a cause. In our efforts to combat this enemy we have spent all our energies trying to destroy the cause by tampering with effect. We can feel the effect, but our indolence and cowardly tendencies have sealed our lips and paralyzed our forces whenever we came in touch with cause and we show our heels to the enemy when there is an opportunity to crowd him into the open.

DISCRIMINATION.

It must be evident to any thoughtful person that this force, this influence, this enemy of the inland town is discrimination. Discrimination in one form or another, discrimination between institutions and communities, giving some individuals advantages over others in the same community and one community over another in the same State or any State, and who or what is it that dispenses this invidious, subtle force with such care and skill that it is scarcely known or traced with difficulty, while its effect is seen on every hand? None other than public service corporations and institutions that grow out of them.

It is well known that large and central points receive much lower rates of transportation than do smaller communities. This alone is enough, but add to it discrimination by rebates, drawbacks, "midnight rates" and other devices intended to cover the wreck strewn path of railway discrimination—and we have a condition almost intolerable.

Nor is this all. Other institutions which are the legitimate offspring of railway monopoly, often owned and controlled by the railway companies direct, and if not directly then by the same individuals under corporate names, and known as trusts, discriminate between individuals and communities, and these advantages usually go to the same source and are so great that the retail merchant of the inland town is often placed upon the same price basis as the consumer who is his customer, thus building up mammoth distributing concerns who seek customers by the advertising route only and whose whole precarious existence is almost wholly dependent upon the continuance of this infamous, outrageous system of discrimination.

Some of my friends may accuse me of talking politics. Admitted, but I am seeking to discover the cause of our troubles. I have a strong scent and I think I am on the right track, and if it leads me into the political camp the fault is not mine. I am by no means sensitive on this question of politics and have spent considerable time and some money in trying to discover and do my duty in this respect, and you will have to do yours if as citizens and merchants we are to be saved from commercial annihilation.

What is monopoly? It is granting to individuals or sets of individuals, through corporation laws, rights, privileges and property denied to other citizens. And who makes the laws granting these special privileges and giving away the public property? Congress and the State Legislatures. And who makes Congress and Legislatures? The people. And when? On election day, and there we are, in politics.

If we admit that these creatures of law are more powerful than their source then we admit the created is greater than the creator, an impossible conclusion.

EDUCATION IN BUSINESS METHODS

is important. To discover means of trade extension is essential. To cultivate better trade relations is admirable. To these and other matters we are giving and should give liberal and thoughtful attention that we may by united action wield a greater power in the business affairs of our country, that we may better serve our patrons, but of greater importance than all these is our duty as a citizen of the Republic. May we have the wisdom and courage to go forth, each in his capacity as a sovereign citizen, to battle for the right that equal justice may prevail among men. Thus shall we save the inland town from decadence and final elimination as a commercial and progressive factor in our civilization.

R. A. Kirk on Catalogue House Competition.

R. A. Kirk of Farwell, Ozmun, Kirk & Co., St. Paul, read an able paper on the catalogue house question, in part as follows:

For the past five years or more I have studied this question carefully from all points of view, and I am here to-day to say that my confidence has never been stronger than it now is in our ability to combat this evil successfully, and that if we all together, jointly and severally, use the means at our command we are sure to win in the end. I do not mean that all catalogue houses will be driven out, but I do mean that the evils resulting from their methods will be largely reduced and will be made endurable. We must admit that the situation has not improved as much as we wish it had done. Nevertheless

MUCH GOOD WORK HAS BEEN DONE

and many excellent results have followed. All that is needed to confirm this view is to compare the latest catalogues with those issued by the same houses 18 months or two years ago. Manufacturers have largely been led to consider and revise their relations with catalogue houses. In very many cases they have withdrawn wholly from this trade, and when they have been unwilling wholly to give up the catalogue house business they have quite generally shown a genuine desire to require the revision and the raising of prices. The list of manufacturers who have not shown a desire to co-operate in this effort to protect the trade against demoralized prices is very small and will doubtless continue to decrease. It is true, however, that

THIS FIGHT MUST BE CARRIED ON

mainly by the retail and wholesale merchants rather than the manufacturers. If the manufacturer can sell his goods both to the regular merchants and also to the catalogue houses he is happy, provided he can feel assured that this condition of things will be permanent. But just here is where the intelligent, farseeing manufacturer fears future trouble. If for any cause he should lose his hold on the wholesale and retail trade, and if the catalogue houses should grow largely in the future, where will the manufacturer stand? He recognizes the great possibilities of disaster for him in the solution of the problem, and as a rule he will stake his future with the wholesale and retail trade.

This brings us to compare the condition to-day of the retail trade with that of several years ago. We find some features favorable and some unfavorable. It is fair to say that while much progress has been made it has not been so large as the occasion has demanded, and yet in some respects I am surprised and gratified at what has been accomplished. The great part of these results has been reached through the work of this association and similar organizations. Indeed, without the aid of associated work, both retail and wholesale, I would have no hope whatever of a final satisfactory outcome.

NO HOUSE SINGLE HANDED

can do much in this work, but if to-day we can have the concentrated efforts jointly and severally of every wholesale and retail merchant throughout the country used effectually in combating this evil the question would be satisfactorily solved in the next year or two. But this involves not only work in an association with others, but also and especially each merchant taking hold of his own trade with the determination that he will hold it or win it back.

This is the point at which we have often been weakest. Some retailers have largely ignored the inroads on their business; they have sometimes looked for help from outside sources which never came; they have found prices that meant that they in order to compete with them must sell at cost or perhaps occasionally even lower; they have probably seen some of their customers become steady patrons of the catalogue house.

I do not wonder in such conditions that a feeling of discouragement comes over the merchant, and that now and then he loses sight of the bright side.

THE SOLUTION OF THE WHOLE MATTER,

in my opinion, rests with the retail man. He is on the ground. The consumer is or ought to be his customer. He knows or ought to know the situation as to the customer whether he is a patron of the catalogue house, and also should know how to treat each individual case. I am sure that he can rely on the jobber for substantial help, but the retail man is the one through whom the work must be done, and if he fails the effort will go for naught.

If the work thus far had been carried on in this way by the retail merchants the condition would be greatly better than it is, but all that has been lost can be regained by determined, intelligent work now. You ask how can the desired results be reached? I answer that it is necessary first to know your trade thoroughly, this knowledge to cover all patrons of the catalogue house that should be your customers. A knowledge, too, that embraces their methods and the time of sending in their orders, covering their present and especially their prospective wants. It is not the small every day pick-up orders from which you suffer most.

YOUR TROUBLE COMES MAINLY

from the made-up assorted orders that go from time to time to the catalogue house. If you are to succeed in the fight you must secure these orders, but how to get them is the question. I am sure you can get into touch with most of your customers so that you can figure with them before their orders are sent away. You should see to it that this sort of relation exists between you and your customers; the real, wide awake, down to date merchant makes this his constant aim and he generally secures it. You find your customer's order embraces a number of articles of Hardware. You figure on them with him, you refer to the catalogue of the house that he favors—and let me add here that you must always have on your desk the very latest catalogues that are sent out; you find the amount of the bill at catalogue house prices and you add freight, also cost of draft. You bring your customer's attention to the delay in getting his goods, to the possibility of damage in transit, to the advantages of buying from you goods of which he can see samples on your shelves, also to the advantage to him of your keeping a stock of goods from which he can draw for his every day wants; you also refer to the fact that it is such houses as yours that keep the business center from becoming a counterpart of Oliver Goldsmith's "Deserted Village," and you appeal to his public spirit, which you can often touch.

Your customer will be found generally willing to pay you somewhat more than the price of the catalogue house. Take his order and send it to your jobber, with a statement of the exact facts, and ask him to ship the goods and to make the price on the bill in "lump sum" as low as he can. Your jobber, I am sure, will help you all he can. I will say for our house that we will do this and, although I am not authorized to say so, I believe other houses will do the same. In this way you do not disturb to much extent the price of goods on your shelves.

YOU HAVE HEADED YOUR CUSTOMER

your way and when he is ready for another order he will be very likely to come to you and you will probably have him thereafter for your regular patron. Of course you will insist on cash being paid on delivery of goods, which is better than the catalogue house does on most of its lines.

This brings us to the very important subject of credits, which is connected to some extent with the catalogue house question, although that system is based on cash with the order. It is not unusual for the retail merchant to carry even for long periods the man who is sending his cash to the catalogue house.

ALL SUCH WHOLLY UNBUSINESSLIKE PRACTICES

should be effectually stopped. In the whole matter of credits the great body of retail merchants should promptly and decisively change their methods. In this respect they are many years behind the jobber. Any retail merchant in good standing can get all needed credit from his jobber, but he is expected to pay interest from due dates. Why should not the retail merchant expect interest on the same from his customer? Many retail merchants carry customers on into the new year without interest, and I suppose it is not a rare case for the account to run well on into the new year without settlement or interest. This is all wrong, and one of the evils resulting from it is that in doing this the merchant is crippling himself in his contest with the catalogue house. Make your accounts bear interest from a 30 and 60 days' dating. Do not be afraid of your competitor in taking this step, but of course when you can do so have this also done by your competitor and other local merchants.

Resolutions.

Among the resolutions adopted were the following:

The Minnesota Hardware Association, in convention assembled, 700 members strong, do hereby emphatically express our disapproval of the so-called parcels post system proposed and being advocated, we believe, by interests which are detrimental to the welfare and continued prosperity of the local merchants in small towns throughout our country.

We do hereby unitedly protest against the suggestion of the Postmaster General at Washington to have the Post Office Appropriation bill so amended that all printed matter and merchandise be carried at 8 cents per pound, one-half the present rate. We firmly believe this to be an entering wedge for the introduction of the parcels post system.

We advocate 1-cent postage for such first-class mail matter as is now carried for 2 cents, and believe the enactment of this plan into law would add much to the bulk of the mails, as well as reduce Government income from the sale of stamps. For this reason, among others self evident to all thinking merchants of our small towns, we hereby decry any plan to cheapen and increase the bulk of mail matter by the parcels post system.

We hereby call upon our Minnesota Senators and Representatives in Congress to do all in their power to further the desires expressed in this resolution. Be it

Resolved, That this convention of Minnesota Retail Hardwaremen, assembled 700 strong, give their unqualified endorsement to the President of this nation in his efforts for a law that will enforce a "square deal" in railroad rate legislation by our national Congress.

Entertainment.

On Thursday evening the members of the Association attended the Orpheum Theater in a body. On Friday afternoon they visited the new building of Farwell, Ozmun, Kirk & Co., in St. Paul, and a thorough inspection of the plant of the Minnesota Linseed Oil & Paint Company was made. Special cars were provided for conveying the members to St. Paul, where the establishments of both concerns are located. The new building of Farwell, Ozmun, Kirk & Co. is nine stories high and is one of the best equipped Hardware jobbing warehouses in the country. Cars conveyed the party after an inspection of this building to the State capitol. Governor John A. Johnson, however, was unable to be present, owing to the late hour at which the party arrived, and he delegated Frank R. Day, his private secretary, to receive them. Several guides were also in attendance and a thorough inspection of this handsome building was made.

CONVENTION NOTES.

Sam T. White, of the White Lily Washer Company, Davenport, Iowa, suggested to Secretary M. L. Corey of the National Retail Hardware Association that a uniform policy be adopted next year with reference to holding conventions four days instead of three and that wherever possible a convention hall be secured where the exhibits could be displayed. Impressed with the mutual benefits derived from the exhibits, Mr. White believes that a convention of four days' duration would not only be of educational value to the members, but of benefit to the exhibitors. While no action has yet been taken on his suggestion it will no doubt be considered at the meeting of the National Association in Chicago.

D. L. Rugg of the North Bros. Mfg. Company, Philadelphia, who is demonstrating the utility of the American Twin Freezers at the Hardware conventions which are being held in the West, has established records in the gratuitous disposition of ice cream in the past four weeks. At Minneapolis he made and disposed of 35 quarts of ice cream, to the eminent satisfaction of not only the women visitors, but the opposite sex as well, while at Chicago his record was 60 quarts a day. The souvenir given out by this company, which consists of a

right and left hand Screw Driver, has proved to be immensely popular.

Hereafter the Minnesota organization will be known as the Minnesota Retail Hardware Association, the word "Dealer" having been dropped, pursuant to the action adopted by the national and other allied bodies in sister States.

A. T. Stebbins, who was honored with the presidency of the Minnesota Association for two years, and Charles F. Ladner, president of the Minnesota Retail Hardware Mutual Fire Insurance Company, were suitably remembered by the members of the association and the policy holders of the insurance company on Friday afternoon. Upon the adjournment of the convention they were presented with handsome rocking chairs and sets of Silver ware.

The exhibit of the Seeger-Gallasch Siphon Refrigerator Company, St. Paul, attracted much attention. Handsome samples of the various designs and sizes of Refrigerators manufactured were well displayed in one of the main halls of the Nicollet, and the new features embodied in the construction of this Refrigerator resulted in numerous orders being placed.

The Western Steel & Iron Works, DePere, Wis., manufacturer of the Western post hole digger, distributed coupons among the visiting retailers, which entitled the merchant to one extra digger upon presentation of the first order with his jobber for one dozen or more post hole diggers. This method of introducing the digger has been adopted at practically all of the Western conventions, and excellent results have been reported.

EXHIBITS.

The rotunda hall, corridors and rooms of the Hotel Nicollet presented the unusually large number and variety of displays of manufacturers and jobbers which have characterized all of the Hardware conventions this year. A list of the exhibitors follows:

AMERICAN STEEL & WIRE COMPANY, Chicago: Fencing. Represented by E. H. Derby, A. L. Bates and G. W. Scott.

E. C. ATKINS & Co., Indianapolis, Ind.: Full line of Saws. Represented by Paul L. Edwin, G. W. Dunnington, A. Munnich and T. F. Barber. Souvenir, memorandum book.

AMERICAN FORK & HOE COMPANY, Cleveland: Represented by W. R. Libhart. Souvenir, celluloid writing pad.

T. L. BLOOD & Co., Minneapolis: Paints. Represented by Verne W. Hartman and E. A. Elsenmenger. Souvenir, seal pocketbook.

CONSOLIDATED WIRE FENCE COMPANY, Hutchinson, Minn.: Interlocking Fencing. H. V. Dimmick.

COOK & VAN EVERA COMPANY, Chicago: Kelsey Furnaces, Ranges and Ventilators. Represented by A. R. Bradley. Souvenir, calendar.

CRIBBEN & SEXTON COMPANY, Chicago: Universal Stoves and Ranges. Represented by H. C. Cook, manager Minneapolis branch, and J. H. Roelker. Souvenir, match safe.

GEO. M. CLARK & Co. DIVISION OF THE AMERICAN STOVE COMPANY, Chicago: Jewel Stoves and Ranges. Represented by L. D. Bond and T. M. Gillfillan. Souvenir, nickel plated Wrench.

DETROIT STOVE WORKS, Detroit, Mich.: Jewel Stoves and Ranges. Represented by A. F. Burnett, L. E. Swane, H. G. Heldt and F. Greene. Souvenir, needle case, tape measure and rule.

ESTATE STOVE COMPANY, Hamilton, Ohio: Full line of Stoves and Ranges. Represented by W. W. Strayer and W. L. Nesbitt.

ESTATE OF P. D. BECKWITH, Dowagiac, Mich.: Round Oak Stoves, Ranges and Furnaces. Represented by J. G. Tompsett and C. A. Howling. Souvenir, novelette, "Amos Hudson's Motto."

FAIRBANKS, MORSE & Co., Chicago: Scales. Represented by N. C. Hickox.

FARWELL, OZMUN, KIRK & Co., St. Paul, Minn.: Displayed line of Favorite Stoves and Ranges; Pittsburgh Steel Fencing, Harness and Blankets. Represented by H. C. Goeltz, W. W. Wilson and E. B. Lofie.

FAULTLESS MFG. COMPANY, St. Charles, Ill.: Stoves and Ranges. Represented by George W. Cahoon.

FELKER BROS. MFG. COMPANY, St. Anthony Park, Minn.: Galvanized Steel Well Casing. Represented by L. H. Felker.

FULLER-WARREN COMPANY, Milwaukee, Wis.: Stewart Stoves and Ranges. Represented by Charles W. Conner.

GRUENHAGEN & FRANCIS COMPANY, St. Anthony's Park, Minn.: Display National, Eclipse and Sterling Stoves and Heaters. Represented by R. A. Briggs, W. H. Gruenhagen, G. F. Honold and C. W. Wittig.

GEE WHIZ MFG. COMPANY, Des Moines, Iowa: Washing Machine. Represented by M. R. Davis.

GERMER STOVE COMPANY, Erie, Pa.: Stoves and Ranges. Represented by T. J. Duffy. Souvenir, stick pin.

HIBBARD, SPENCER, BARTLETT & Co., Chicago: Extensive line of Hardware. Represented by Frank Hibbard, W. J. Morehead, J. E. Nolan, A. Terbush and Charles Porter.

HUDSON & THURBER COMPANY, Minneapolis: Lawn Mowers, Hay Tools, Cream Separators. Represented by M. S. Thurber.

HEATH-QUIMBY COMPANY, Minneapolis: Brandt Sprayer. Represented by L. V. Quimby.

HEATH & MILLIGAN MFG. COMPANY, Chicago: Paints. Souvenirs, sunshine sets.

HUNT, HELM, FERRIS & CO., Harvard, Ill.: Haying Tools and Hardware specialties. Represented by W. S. Young. Souvenir, turtle paper weight.

HURTY-SIMMONS HARDWARE COMPANY, Minneapolis: Represented by Howard Simpson and G. D. Parmele. Keen Cutter Tools, Cutlery, Steel Goods, Wilson Heaters, Volo Sewing Machines, Wonder Freezers, Siberia Refrigerators, Sporting Goods.

JOLIET STOVE WORKS, Joliet, Ill.: Moore's Stoves and Ranges. Represented by C. L. Featherstone and H. E. Kohl. Souvenir, traveling bag tag.

KELLEY-HOW-THOMSON COMPANY, Duluth: Sporting Goods and Cutlery. Represented by Tom J. Flynn.

C. W. LASHER MFG. COMPANY, Davenport, Iowa: Represented by L. S. Lasher. Pot Cover, Cabinet and Plate Scrapers. Souvenir, Plate Scraper.

LYONS SPECIALTY COMPANY, Lyons, Iowa: Combination Strainer and Cut-Off, Door Latch and Holder. Represented by W. Peterson.

MINNESOTA STOVE COMPANY, Shakopee, Minn.: Represented by E. A. Campbell and C. W. Nye. Coral Stoves and Ranges.

MALLEABLE IRON RANGE COMPANY, Beaver Dam, Wis.: Stoves and Ranges. Represented by Silas McClure and J. P. West. Souvenir, ash tray.

MILWAUKEE CORRUGATING COMPANY, Milwaukee: Metal Cellings. Represented by W. Horn, Jr., and F. G. Prime.

MINNEAPOLIS REGULATOR COMPANY, Minneapolis: Heat Regulator. Represented by L. A. Norton.

MANUFACTURERS' STOVE REPAIR COMPANY, Chicago: Heat Regulator. Represented by George W. Fitzpatrick.

L. J. MUELLER FURNACE COMPANY, Milwaukee: Represented by G. Mueller, L. Mueller, Jr., W. A. Russell and H. A. Kilman. Furnaces. Souvenir, initialed watch fob.

MISSISSIPPI VALLEY STOVE WORKS, Fulton, Ill.: Solar Ranges.

MALLEABLE STEEL RANGE COMPANY, South Bend, Ind.: Full line of Ranges. Represented by C. D. Britton and R. E. Adams. Souvenir, hat pin.

NORTH BROTHERS MFG. COMPANY, Philadelphia: Tools, Freezers, Fluting Machines, Ice Chippers. Represented by De L. Rugg. Souvenir, right and left hand Screw Driver.

NEY MFG. COMPANY, Canton, Ohio: Haying Tools and Hardware specialties. Represented by Charles I. Dowder.

NICKEL PLATE STOVE POLISH COMPANY, Chicago: Stove Polish. Represented by H. Rogers.

W. S. NOTT COMPANY, Minneapolis: Roofing. Represented by W. N. Connor and H. Dale.

OHIO VARNISH COMPANY, Cleveland, Ohio: Full line of Varnishes. Represented by W. H. Angell. Souvenir, sample can Varnish.

PRATT & LAMBERT, Buffalo: Varnishes. Represented by J. N. Welter.

RINGEN STOVE COMPANY, St. Louis: Quick Meal Stoves and Ranges. Represented by R. H. Dieckhoff and L. A. Buck.

RATHBONE, SARD & CO., Aurora, Ill.: Acorn Stoves and Ranges. Represented by A. C. Anderson, W. R. Yendall and E. T. Sheridan. Souvenir, pocketbook and stick pins.

ROBESON CUTLERY COMPANY, Rochester, N. Y.: Full line of Cutlery. Represented by A. D. McGilora.

ROCHESTER STAMPING COMPANY, Rochester, N. Y.: Stamped Metal Ware. Represented by A. D. McGilora.

ROCK ISLAND STOVE COMPANY, Rock Island, Ill.: Stoves. Represented by F. B. Wood. Souvenir, cuff buttons.

STOWELL MFG. & FOUNDRY COMPANY, Milwaukee: Wilbern Door Hanger, Combination Vises. Hay Tools. Souvenir, pen wiper.

M. F. STELLWAGEN & SON, Minneapolis: Representing the Romer Axe Company, Dunkirk, N. Y.; the La Pierre-Sawyer Handle Company, Jackson, Mo.; the Baxter Stove Company, Mansfield, Ohio. Souvenir of Baxter Stove Company, miniature Hammer.

ST. PAUL ROOFING, CORNICE & ORNAMENT COMPANY, St. Paul: Architectural Sheet Metal work. Represented by George W. Howard.

STANDARD AXE & TOOL WORKS, Ridgway, Pa. Axes. Represented by T. H. Reeves.

SEGER-GALLASCH SIPHON REFRIGERATOR COMPANY, St. Paul: Full line Family Refrigerators. Represented by Adolph G. Gallasch and John A. Seeger.

SUMMIT FOUNDRY COMPANY, La Crosse, Wis., and Geneva, N. Y.: Furnaces. Represented by I. H. Johnson and J. G. Elston.

TWENTIETH CENTURY HEATING & VENTILATING COMPANY, Akron, Ohio: Regulator, Steam Boilers and Hot Water Heaters. Represented by O. F. Morrow, W. S. Roth and B. R. Prenke.

UNITED STATES GRAPHITE COMPANY, Saginaw, Mich.: Stove Polish. Represented by C. H. Schenck.

UNITED STATES REGISTER COMPANY, LIMITED, Battle Creek, Mich.: Jones Registers and Ventilators. Represented by L. Mobio.

VOSS BROTHERS MFG. COMPANY, Davenport, Iowa: Ocean Wave and Eclipse Washers. Represented by A. Clifford and W. H. Voss. Souvenir, pin tray.

VERMONT FARM MACHINE COMPANY, Bellows Falls, Vt.: Cream Separators. Represented by Ove Flaten and W. A. Maw.

WESTERN STEEL & IRON WORKS, De Pere, Wis.: Post Hole Digger. Represented by G. W. Cate.

WAHLE FOUNDRY & MACHINE WORKS, Davenport, Iowa: Represented by H. H. Wahle and George Matern. White Swan, Cas-

cade and Snowball Washers. Souvenirs, White Swan hangers and baseball.

WAVERLY WOODENWARE WORKS, St. Joseph, Mo.: Washing Machine. Represented by H. C. Broderick.

WHITE LILY WASHER COMPANY, Davenport, Iowa: Washing Machine. Represented by Sam T. White and T. H. Rosche. Souvenir, ash tray.

WISCONSIN FOUNDRY & STEEL WORKS, Cedar Grove, Wis.: Steel Ranges. Represented by John Jungers, H. F. Wilson and P. J. Stokdyk.

YALE & TOWNE MFG. COMPANY, New York: Locks, Builders' Hardware, Art Metal Work. Represented by A. B. Howell. Souvenir, paper knife, oxidized handle.

MINNESOTA ASSOCIATION MAP.

The Minnesota Association still maintains its position at the head of the column of State retail Hardware associations so far as membership is concerned. This organization now comprises more than 700 members in good standing, which is a very creditable percentage of the total number of Hardware merchants of the State, estimated at about 1100. The officials and members are, however, just as energetic as ever in the work of securing new adherents, and during the coming year an effort will be made to boost the membership roll beyond the 800 mark.

The map herewith presented shows that the association has its votaries in every section of the State, the towns underscored, more than 400 in number, being represented in the membership.

MEMBERS OF THE MINNESOTA RETAIL HARDWARE ASSOCIATION.

ADA.	BEAUDETTE.
Andrews & Hampson.	Williams Bros.
Chas. H. Brown.	BEAVER CREEK.
Theo. Lystad.	H. Ohs & Son.
Lovanes & Sjoridal.	BELGRADE.
ADAMS.	Olson & Iverslie.
Klima Bros.	Lindquist & Linderholm.
M. Schneider.	BELLE PLAINE.
ADRIAN.	A. H. Abraham.
C. A. Sands.	Neubelser Hardware Company.
AITKIN.	BELLINGHAM.
D. W. Harper.	Nels A. Rudning.
W. B. Marr.	Rosenwald Bros.
Fred. Shadegg.	BELTRAMI.
ALBANY.	Budd & Regedal.
A. J. Schwinghammer.	BELVIEW.
Kraker & Werlin.	Pottratz Bros.
ALBERT LEA.	Holvig & Monson.
Hanson & Anderson Company.	BEMIDJI.
Peterson Hardware Company.	J. A. Ludington.
ALDEN.	W. M. Ross.
H. A. Ebert.	BENSON.
ALEXANDRIA.	Amile Bros. & Co.
Cowling-Robards Company.	Benson Hardware Company.
H. A. Le Roy & Co.	BERTHA.
ALMENA, WIS.	Villwock Bros.
Jno. Nimerfroha.	BETHEL.
ALPHA.	Lemuel Robinson.
Jno. Waswo.	BIG LAKE.
AMBOY.	Johnson & Falk.
K. S. Haroldson.	BIRD ISLAND.
Cooper & Day.	Frank Poseley Hardware Com-
Rue-Pederson & Co.	pany.
ANNANDALE.	Kromer & Hurley.
Jno. H. Burl.	BIWABIK.
Dunton & Rackliff.	Biwabik Hardware Company.
APPLETON.	BLACKDUCK.
A. K. Pederson.	Loso & Rondenne.
Rosenkranz & Lovens.	BLUE EARTH.
ARGYLE.	H. A. Bretzke.
Olson & Holen.	Maxson Hardware Company.
ARLINGTON.	James Hamilton.
M. Malerich.	BONIFACIUS.
ASHBY.	C. M. Groschens.
C. S. Skaar.	BOYD.
Bemis & Co.	Flaa Bros.
ATWATER.	Saltness & Beisaas.
Atwater Hardware & Imple-	BRAHAM.
ment Company.	Braham Merc. Company.
M. Anderson.	S. J. Nyquist.
N. Lundgren.	BRAINERD.
AUDUBON.	Slipp-Gruenhagen Company.
A. Swanson.	White Bros.
AUSTIN.	Hawkins, Welch & Hawkins.
W. J. Urbatch & Bro.	BRANDON.
Revord & Holmes.	Olson Bros.
Decker Bros.	Fred. Oberle.
AVON.	O. F. Olson.
Borgerding & Hilbert.	BRECKENRIDGE.
BADGER.	Bott Hardware Company.
Chas. Edelstein.	Louis Gewalt.
BAGLEY.	BREWSTER.
Peterson & Johnson.	Brewster Hardware Company.
Hanson & Walsh.	Duba & Duba.
BALATON.	BRICELYN.
Olson Bros.	Fink & Linderman.
BARNESVILLE.	BRONSON.
W. Atkinson & Son.	N. B. Nelson.
P. H. Kelfer.	BROOTON.
Wm. J. Tiss.	H. T. Nelson & Co.
BARRETT.	Nelson Hardware Company.
Peterson Bros. & Larson.	BROWERVILLE.
I. J. Hauge & Co.	Lano & Irsfeld.
BARRY.	BROWNSDALE.
P. R. Hartney.	N. K. Dahl.
BATTLE LAKE.	BROWN'S VALLEY.
Ranstad & Hanson.	Brown Bros.
A. C. Hatch.	G. S. Lines.
BEARDSLEY.	BROWNTON.
Jordan Brothers.	D. Y. Butler.
Wright Brothers.	L. G. Prah.
	West-Holmes Hardware Co.



Hardware Association Map of Minnesota.

BRUCE, WIS.
Henry Leppert.
BUFFALO.
E. O. McGaffey & Co.
Frank McKnight.
BUFFALO LAKE.
Manthel & Nagel.
BUHL.
T. P. Cory.
BURTRUM.
Jno. H. Merts.
BYRON.
H. A. Hoton.
CALEDONIA.
H. C. Siefert.
M. Gensmer & Son.
CAMBRIDGE.
Gouldberg & Anderson.
Lundberg-Peterson Lumber &
Hardware Company.
CAMERON, WIS.
Ed. Post.
CANBY.
J. G. Koch.
J. O. Peterson.
Torgerson Bros.
CANNON FALLS.
Emil J. Holmes.
C. B. Johnson.
CANTON.
E. T. Soland.
CARVER.
Jno. Funk.
CASS LAKE.
Geo. Birtsch.
C. E. Battles.
CENTER CITY.
F. G. Lorenz.
Axel L. Carlson.
CHYLON.
Fahb & Hawthorn.
Chas. H. Wessel.
H. A. Saggau.
CHATFIELD.
H. H. Heydon.
Halloran & Maynard.

CHISAGO CITY.
Bloom Mercantile Company.
CHOKIO.
Leaman & Co.
Ross & Salmonson.
CLARA CITY.
Clara City Mercantile Co.
Eenkema Supply Company.
CLARKFIELD.
Hulteen & Friberg Bros.
Silver & Olein.
CLEAR LAKE.
Jno. H. Dingman.
CLEMETS.
Gerstman & Hopfenspirger.
CLEVELAND.
H. H. Flowers.
CLIMAX.
J. A. Fossum.
CLINTON.
A. G. Brenner.
J. D. Ross.
CLITHERAL.
K. H. Robblin.
CLOQUET.
Jos. Loisel.
L. A. Fish & Co.
COKATO.
Titrud Bros.
COLD SPRINGS.
Wenner & Co.
COMFREY.
Adams & Redding.
COTTONWOOD.
Jno. Michle.
CROOKSTON.
A. O. Busterud.
Clark Bros.
A. J. Sauve & Bro.
J. E. O'Brien & Co.
L. E. Larson.
CURRIE.
Currie Hardware Company.
CYLON, WIS.
S. W. Holsinger.

CYRUS.
Iver Thompson.
H. C. Estby.
DALTON.
J. O. Hatling.
DANVERS.
Gust Hansing.
DAWSON.
Lund & Amundson.
H. H. Onstad.
DEER CREEK.
J. O. Smith & Co.
DE GRAFF.
P. W. Bresnahan.
DELANO.
A. W. Kittock.
J. W. & F. Q. Lindsley.
DELAVER.
Lein Bros.
DELHI.
F. J. Tibbetts.
DENT.
Stander & Jonas.
W. P. Stephani.
DETROIT.
J. L. Ketten & Co.
DEXTER.
W. E. Dalley.
DONNELLY.
J. E. Peterson.
DOVER.
Cady Bros.
DULUTH.
Duluth Hardware Company.
R. R. Forward & Co.
Chas. A. Gustafson.
E. J. Ketchum.
Kelley Hardware Company.
Jno. Lundquist.
L. K. Dougherty.
B. W. How.
EAGLE BEND.
Cowgill & Brown.
EASTON.
Feist & Bachtie.

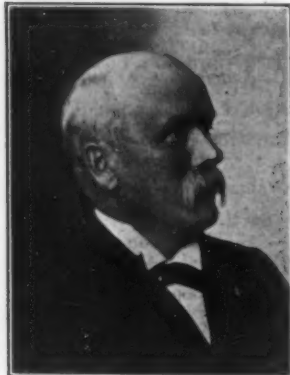
ECHO.
W. H. Garry.
Honne & Stage.
EDEN VALLEY.
F. C. Meyer.
Eden Valley Hardware & Im-
plement Company.
ELBOW LAKE.
Hauge Lumber & Hdw. Co.
F. A. Johnson & Co.
ELGIN.
Searles & Seim.
ELIZABETH.
Maurin Bros.
ELLENDALE.
Ellendale Hardware Company.
ELY.
M. E. Gleason.
A. J. Fenska.
ELYSIAN.
Elysian Hardware Company.
EMMONS.
Knutson & Olein.
Olson & Iverson.
ERDAHL.
Anderson Bros.
ERSKINE.
Gliberton & Espebeth.
EVAN.
Jensen & Hansen.
EVANSVILLE.
Lindstrom & Ekblad.
Evansville Lumber Company.
EVELETH.
Lees Hardware Company.
EXCELSIOR.
R. H. De Groodt.
Joslin Bros.
EYOTA.
Rhames & Sasse.
FAIRFAX.
Fairfax Hardware Company.
FAIRMONT.
Smith & Vlesseiman.
Houghteling & Coult.
FARIBAULT.
Drehmel Bros.
Devery & Donahue.
Cavanaugh & Frink.
T. H. Loyed & Son.
Clem M. Wall.
FARMINGTON.
A. H. Sprute.
K. Record.
Irving Hardware & Imp. Co.
FARWELL.
Ormseth & Belgum.
FELTON.
A. C. Mogan & Co.
FERGUS FALLS.
J. Niebels.
Frankoviz Hardware Company.
Kolseth & Bjerkling Company.
FERTILE.
Brown Duckstad.
FISHER.
O. Larson & Son.
FOLBY.
Kline & O'Donnell.
FOREST LAKE.
J. P. Murphy & Son.
FOSSTON.
John Hillestad.
L. S. Johnson.
Larson, Carpenter & Co.
FOUNTAIN.
Wade & Pusch.
FOXHOME.
I. A. Gates.
FRANKLIN.
Hauser Lumber Company.
Foss & Freeman.
FREDERICK, WIS.
Mr. Carlson.
FREEPORT.
Nick Hocker.
FULDA.
Hyslop & Hoss.
GARFIELD.
Knutson & Peterson.
GARDEN CITY.
Hager Bros.
W. J. Osgood.
GARY.
Milsten & Lee.
GAYLORD.
Gaylord Hardware Company.
F. H. Kempie.
GIBBON.
Johnson & Johnson.
GHENT.
A. H. Lerschen.
GLENCOE.
L. P. Albrecht.
H. Wadsworth & Co.
GLENVILLE.
Jay Bartlett.
GLENWOOD.
H. A. Myron.
T. Callaghan.
GOODHUE.
Barteau & Woodbury.
Goodhue Hardware & Imp. Co.
GOOD THUNDER.
C. C. Bruseke.
GRACEVILLE.
M. D. Hartnett.
B. A. Costello.
GRANADA.
Field & Boston.
GRAND FORKS.
J. F. Brandt.
GRAND RAPIDS.
W. J. & H. D. Powers.
GRANITE FALLS.
A. G. Winter.
GRANTSBURG, WIS.
A. M. Jenbon.

GRASSTON.
Grasston Hardware Company.
HALLOCK.
Thos. Inglis & Son.
Nelson & Gullander.
HALSTAD.
Sulerud Bros.



JULIUS SCHMIDT.

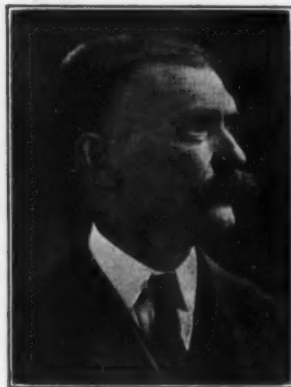
HAMPTON.
P. O. Clark.
HANCOCK.
John Erickson.
Stone-Stebbins Company.
HANLEY FALLS.
Ing. Johnson.
HANOVER.
W. H. Vollbrecht.
HANSKA.
Hanska Hardware & Imp. Co.
HARDWICK.
E. A. Hartley.
HARMONY.
Edw. F. Kidder.
HARRIS.
Stark & Johnson.
HAWLEY.
Andrew Johnson.
HAYFIELD.
John O. Aaby.
Bergan & Glere.
HAZEL.
A. M. Edstrom.
HECTOR.
Hector Hardware Company.
Johnson Hardware Company.
HENDERSON.
Groetsch & Sander.
Bosel Brothers.
HENDRICKS.
Johnson & Dorn.
Wold Brothers.
HENDRUM.
Rask & Larson.
HENNING.
Post & Knutson.
Poulson & Korstad.
HERMAN.
B. H. Phinney & Co.
Wells, Olson & Co.
HERON LAKE.
J. F. Humiston.
HIBBING.
W. H. Close Hardware Co.
Ersparmer Bros.
M. Pastoret.
HILLS.
F. C. Nuffer.
Wm. Thompson.
HINCKLEY.
I. Conklin.



A. T. STEBBINS.

HITTERDOL.
M. J. Solum.
HOFFMAN.
Danielson & Co.
Clarquist & Lindstrom.
HOLLAND.
Henry D. Siebring.
HOUSTON.
Thos. Rowland.

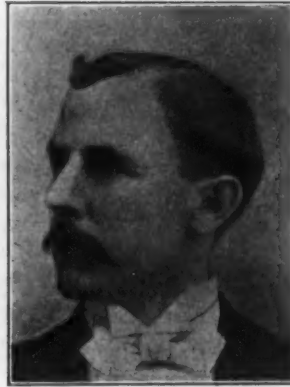
HOWARD LAKE.
Koenig Hardware Company.
HUTCHINSON.
Ritter & Hartwig.
F. J. Zila & Co.
IHLEN.
Ihlen Mercantile Company.
INTERNATIONAL FALLS.
Green Hardware Company.
ISANTI.
Peter Peterson.
IVANHOE.
A. G. Nelson.
JACKSON.
C. L. Mickey.
Gillespie & Son.
JANESVILLE.
F. L. Hagen & Son.
JASPER.
Marshall & Gregg.
G. Frederick & Co.
JEFFERS.
J. J. Duroe & Sons.
W. S. Castledine & Sons.
JORDAN.
Chris. Juni.
C. H. Casey.
Wold & Co.
KASOTA.
Jno. Ofenloch.
KASSON.
Lincoln Drew.
Ziesemer & Parkin.
KELLOGG.
Heuer & Schurts.
KENSINGTON.
A. H. Christinsson & Co.
J. A. Wedum Company.
KENYON.
F. W. Patridge.
C. A. Petterson.
Gunderson & Son.
KERKHOVEN.
Nyquist & Westerdahl.
KIMBALL.
Arrowood Bros.
Walter Dixon.



M. S. MATHEWS.

LAFAYETTE.
Larson & Bergquist.
H. E. Walker Lumber Company.
LAKE CITY.
C. Wise & Sons.
LAKE CRYSTAL.
Thomas & Jones.
LAKEFIELD.
Clark Bros.
LAKE PARK.
O. A. Erickson & Co.
E. T. Vigen & Co.
LAKEVILLE.
D. L. Sullivan.
LAMBERTON.
Peter S. Siefert.
A. M. Clark & Sons.
LANESBORO.
Thompson & Habberstad.
LANSING.
A. J. Salzgeber.
LA SALLE.
La Salle Hardware & Imp. Co.
LENGBY.
Olson & Haglund.
LE ROY.
C. A. Roy.
F. W. Sprung.
LESTER PRAIRIE.
Gennrich & Rolf.
Weiss & Kuhlman.
LE SUEUR.
Huberty Bros.
Cosgrove Company.
W. H. Tomlinson.
LE SUEUR CENTRE.
C. H. Collins Company.
LEWISTON.
Nussloch & Sons.
Greer & Peters.
LEWISVILLE.
Lewisville Harness & Hdw. Co.
LINDSTROM.
Gus Lentz.
LISMORE.
Roelfs Bros.
LITCHFIELD.
McNulty & Co.
Settergren Bros.
Litchfield Hardware Company.

LITTLE FALLS.
J. W. Berg.
Dennis & Jetka.
Ellenbecker & Goelet.
LONDON.
Sherman Hyatt.
LONG LAKE.
W. W. Carr & Son.
LONG PRAIRIE.
W. A. Barto.
Lano & Deuhs.
LOUISBERG.
Philly & Beadle.
LOWRY.
Lowry Hardware, Furnace & Machinery Company.
LUVERNE.
J. W. Gerber.
LYLE.
Blakstad & Co.
Culbertson & Dahl.
MABEL.
Fossum & Fawcett.
F. J. Donald.
MADELIA.
W. H. Foss.
MADISON.
Ole Kettelson.
O. H. Berg.
MADISON LAKE.
Allyn Brothers.
L. H. Fish.
MAHNOMEN.
Aug. Priake.
MANKATO.
Seb. Zimmerman.
Schroeder & Murphy.
Lewis & Son.
MANTORVILLE.
M. G. Peters.
MAPLE LAKE.
Anton Hammers.
J. O. Jenkins.
P. H. Leahy.
MAPLE PLAIN.
John H. Beer.



GEO. F. DUERRE.

MAHETTA.
Rue & Adams.
Griffin & Sommermeyer.
H. A. Heckert & Co.
MARSHALL.
R. M. Addison.
J. P. Watson.
MAYER.
Gongoli Bros.
MAYNARD.
John Swift.
Vold & Anderson.
Thomton & Berg.
MAKEPPA.
W. G. Kingsford.
M'INTOSH.
Carpenter & Webster.
Halverson-Hundebly Company.
MELROSE.
Melrose Hardware Company.
J. H. Kraker.
MENTOR.
Cena. Nelson.
MERRIAM PARK.
H. F. Smith.
Ed. Gruenhagen.
MILACA.
Milaca Hardware Company.
MILAN.
Christenson Bros.
MILLVILLE.
A. C. Schleicher.
MINNEAPOLIS.
Est. of H. A. Anderson.
Builders' Hardware Company.
George O. Brimhall.
John M. Billman.
G. Boehme & Son.
M. F. Dressier.
Anton Ebe.
Gardner Hardware Company.
Hennepin Hardware Company.
Haften Bros.
Hundebly & Son.
Jones & Sawyer.
A. Kraus.
W. K. Morison & Co.
Nelson Hardware Company.
H. O. Roberts.
William Simms.
Frank C. Smith.

J. H. Smith.
Strehmel Bros.
Gust E. Woehler & Co.
Warner Hardware Company.
MINNEOTA.
Gelwitz & Co.
W. B. Gislason.
MINNESOTA LAKE.
E. O. Trahms.



CHAS. F. LADNER.

Albert Craychee.
Peter Kremer Hardware Co.
MONTEVIDEO.
P. L. Norman.
Claggett Bros.
MONTGOMERY.
Montgomery Hardware Co.
MONTICELLO.
Houston & Chamberlain Hw. Co.
MONTROSE.
C. A. Stolsman.
MOORHEAD.
Moorhead Hardware Company.
P. J. Sullivan.
A. R. Charest.
MOOSE LAKE.
P. O. Slettum.
Herman T. Carlson.
MORGAN.
John Marti.
A. V. Readon.
MORRIS.
N. Estaque.
MORRISTOWN.
Miller Bros.
MORTEN.
Keefe-Sternzel & Co.
MORTON.
Watschke, Mathes & Co.
MOUNTAIN IRON.
G. A. Apol.
MOUNTAIN LAKE.
J. D. Hiebert.
MURDOCK.
Erickson & Lawson.
NASHWAUK.
Nashwaук Hardware Company.
NASSAU.
W. G. Mix.
NEW AUBURN.
Henry Dittmer.
NEW GERMANY.
A. Biersdorf.
NEW LONDON.
Monson Bros.
W. S. Johnson.
NEW PAYNESVILLE.
E. O. Phipps.
NEW PRAGUE.
New Prague Hdw. & Imp. Co.
Sachs & Rynda.



J. F. MCGUIRE.

NEW RICHLAND.
A. J. Newgard & Son.
NEW ULM.
L. H. Retzlaff.
New Ulm Hardware Company.
NEW YORK MILLS.
A. J. Sitz.

NICOLLET.
Herman Stage.
NORCROSS.
Andrew Lund.
NORTH BRANCH.
Satterstrom & Herfeld.
NORTHFIELD.
H. A. Boe.
Lynse & Zaunmiller.
Bierman Bros.
NORTH REDWOOD.
Farrell & Keefe.
NORTH ST. PAUL.
Schleck & Co.
NORWOOD.
H. & F. W. Lindert.
August Hartelt.
ODESSA.
Thomas Zimmerman.
Zweiner Bros.
OGILVIE.
B. Gadola.
OLIVIA.
M. A. Petricka.
Heins & Byers.
W. J. Heaney.
Schendel & Kuske.
ORTONVILLE.
McLane & Chapman.
C. J. Stark & Co.
OSCEOLA, WIS.
J. N. Feyder.
OSLO.
A. J. Hilden.
OSSEO.
E. Haviland & Co.
OWATONNA.
C. Butsch.
Parrott & Smith.
Thompson & Roell Hdw. Co.
PARK RAPIDS.
F. W. Rossman.
F. A. Fuller.
PELICAN RAPIDS.
Nells Poulson.
L. A. Williams.
PEQUOT.
J. C. Thurlow.
PERHAM.
A. Marckel.
Kukowski Bros.
PERLEY.
Ostby & Johnson.
PHILBROOK.
B. F. Marsh.
PINE CITY.
D. Greeley.
F. E. Smith.
PINE ISLAND.
Nolan & West.
PLAINVIEW.
George F. Duffe.
PLATO.
C. H. Breijl.
D. J. Graupmann.
PRESTON.
M. M. Blunt.
H. E. & A. T. Schaefer.
PRINCETON.
B. D. Grant.
Evens Hardware Company.
Caley Hardware Company.
PROSPER.
Elmer Keefer.
SACINE.
Chris. Schwarz & Bro.
RAYMOND.
Raymond Merchandise Co.
Spaeth Hardware & Imp. Co.
READING.
R. J. Jones.
RED LAKE FALLS.
O'Brien Bros.
Frank E. Hunt.
RED WING.
Johns & Foss-Armstrong Co.
Swanson & Anderson.
Scherf Bros.
E. O. Peterson.
REDWOOD FALLS.
E. A. Pease.
RENVILLE.
Heins & Co.
Bratsch & Field.
REVERE.
Standard Lumber Company.
ROCHESTER.
Baker & Hanson.



C. H. CASEY.

A. T. Stebbins.
H. R. Hymes.
Hall & Hanson.
ROCKFORD.
D. R. Thompson.
ROLLINGSTONE.
Schuh Bros.
ROSEAU.
Thompson Bros.
ROSE CREEK.
John Blonigan.
ROTHSAY.
Carl Knutson.
O. H. Lunder.
ROYALTON.
C. W. Bouck.
Dragoo & Davidson.
B. Feitsam.
RUSH CITY.
W. J. Hopps.
RUSHMORE.
Innes Lumber Company.
J. H. Bryden & Son.
RUTHTON.
Holger Pederson.
SABIN.
Fred Scheel.
SACRED HEART.
Peter O. Roe.
Osmundson & Skalbeck.
ST. CHARLES.
Otto Pfefferkorn.
S. A. Johnson & Co.
ST. CLOUD.
Charles F. Ladner.
Powell Hardware Company.
Nick Libert.
Thielman Bros.
ST. CROIX FALLS, WIS.
Ben. Clayton.
ST. JAMES.
Behnke & Oetting.
Engelbrecht Bros.
St. James Hardware Company.
ST. PAUL.
Hass & Anderson.
Theo. G. Helle & Co.
H. C. Hertz.
Lamb Lumber Company.
A. Marzolf & Co.
J. F. McGuire & Co.
Nolting & Kernkamp.
Schroeder Bros.
J. C. Stuhlman.
ST. PETER.
Evenson Bros.
C. H. Feldman.
Mason Bros.
Nutter Bros.
Smeby, Kohn & Bell.
SANBORN.
Posz & Gleason.



ELMORE HOUGHTALING.

HANDSTONE.
H. P. Webb & Co.
SAUK CENTRE.
G. Hillerud.
J. H. Haddock & Co.
Schleusener Hardware Co.
SEBEKA.
Isaac Foster.
Jares & Lean.
SEDAN.
T. J. Rooney.
SHAFER.
Slettengren & Co.
SHAKOPEE.
G. S. Lander.
Schroeder Brick & Mfg. Co.
SHELLY.
Hanson Bros.
SHERBURN.
Charles Grill.
SILVER LAKE.
John Krejci.
SLATTON.
A. Peick.
SLEEPY EYE.
R. H. Bingham & Co.
Steinke-Seidl Lumber Company.
SOUTH HAVEN.
Central Lumber Company.
SPICER.
McManus Bros.
SPRINGFIELD.
Schmidt & Lehrer Company.
SPRING GROVE.
Nelson & Tone.

SPRING VALLEY.
F. J. Harris.
STANCHFIELD.
Bodell & Gray.
STAPLES.
Charles Batcher.
STARBUCK.
Brevig & Anderson.
A. G. Englund.
STEWART.
C. R. Donaldson.
STEWARTVILLE.
W. S. Davis.
Demro & Ballard.
STILLWATER.
Aug. Loeber.
SUPERIOR, WIS.
Bingham Hardware Company.
Pease Hardware Company.
SWANVILLE.
Meyer & Kind.
Markenson & Kahn.
THIEF RIVER FALLS.
C. C. Jackson & Co.
Oen & Granum.
Skagen & Thompson.
TINTAH.
Crescent Lumber Company.
Flynn Bros.



W. T. COWING.

TORAH.
Jacob Feiden.
TOWER.
W. H. Congdon & Co.
TRACY.
D. H. Evans.
N. S. Taarud & Son.
TRIUMPH.
W. J. Hass.
TRUMAN.
Ebert Hardware Company.
Williams & Merrill.
TWIN VALLEY.
Ramsey Bros.
P. O. Hansen.
TYLER.
Jensen & Jaspersen.
ULEN.
G. A. Kankel.
Ulen Hardware & Implement Co.
VIRGINIA.
John Mesberg.
A. Hawkinson.
Virginia Hardware Company.
WABASHA.
Julius Schmidt.
Schwartz & Marsh.
WABASSO.
Wabasso Hardware Company.
WACONIA.
Frank Worstrel.
WADENA.
Theo. Brockhoff.
Wadena Hardware Company.
WALNUT GROVE.
D. O. Bulen.
WAHNEEN.
M. L. Larson.
WASECA.
Mahler & Habeln.
T. H. Johnson.

WATERTOWN.
Anderson & Carlson.
Abbot & Hohmann.
WATERVILLE.
George T. Murray.
John Gackle & Son.
F. A. Lowe & Co.
WATHAM.
Chris. C. Erickson.
WATSON.
H. N. Marken.
WAVERLY.
Joseph Nuwash.
WELCOME.
L. C. Payne.
Welcome Hardware Company.
WELLS.
Candee & Osdoba.
E. A. Siddall.
WENDELL.
L. C. Bergan.
L. O. Sand.
WESTBROOK.
I. D. Annis.
G. W. McFarland.
WEST CONCORD.
Cain Bros.
J. C. Crossett.
WEST DULUTH.
Schell & Wade.
F. H. Wade.
WHEATON.
Erickson & Helleson.
Wheaton Drug & Merc. Co.
WHITE BEAR.
G. H. Lemon.
WHITE ROCK, S. D.
Johnson & Co.
WILLMAR.
Ohsberg, Selvig & Co.
Lewis Hardware Company.
Willmar Hardware Company.
WILMOT.
U. G. Cumming & Co.
WINDOM.
George Miller.
WINNEBAGO.
Marcy & Andrews.
H. N. Welch & Co.
WINONA.
C. A. Baeuerlen.
WINSTED.
D. E. Campbell.
William Werner.
WINTHROP.
C. J. Larson.
Streeseaman & Lofthus.
WOODSTOCK.
E. L. Meyers.
WORTHINGTON.
W. E. Moses.
WYCKOFF.
Peshak & Peshak.
W. F. Kruger.
WYLLIE.
Leppert Bros.
YOUNG AMERICA.
John Hoernemann.
ZUMBRO FALLS.
W. I. Disney & Sons.
ZUMBROTA.
William F. Bevers & Son.
Batson & Batson.
Myron & Olson.



LOUIS GEWALT.

WHEELING CORRUGATING COMPANY.

THE WHEELING CORRUGATING COMPANY, Wheeling, W. Va., has recently completed a very commodious office building in that city, which it is now occupying. This company makes a full line of Corrugated Iron Roofing, Ceilings and other similar work and has recently placed on the market a complete line of Galvanized Ware, including Coal Hods, Water Pails, Fire Pails, Sap Pails, Wash Tubs, &c.

Hocker Hardware Company has succeeded Marable-Hocker Hardware Company, Clarksville, Texas, in the wholesale and retail Shelf and Heavy Hardware, Stove, Implement, Paint and Sporting Goods business.

VAN CAMP HARDWARE & IRON COMPANY'S NEW BUILDING.

VAN CAMP HARDWARE & IRON COMPANY, Indianapolis, Ind., has recently taken possession of its new building, an imposing structure of dull red brick, located at the corner of Missouri and Maryland streets, adjacent to the Chicago line of the C., C., C. & St. L. R. R. A private switch leads directly into the building. Six large sized freight cars can be unloaded at one time, discharging the load directly into four large electric elevators for quick distribution to the various floors. The building is 200 feet square, with a floor area of some 360,000 square feet, about 9 acres, distributed over eight floors and basement. The main entrance, on Maryland street, is handsomely finished in white marble and leads into the elegantly appointed offices. The color scheme here is moss green, and wood work, furniture and decorations are all finished in this restful color. The office equipment is all new. In one corner is the private office of the president of the company, Cortland Van Camp, and adjoining is a commodious room for the directory. A mezzanine floor overlooking the office affords space for sample rooms, catalogue department and other offices not in direct contact with the public. The balance of the first floor is devoted to Heavy Hardware—the immense stock of iron and steel and the shipping and receiving departments. The second floor is devoted to Heavy Hardware and Carriage Supplies. The third floor carries Shelf Hardware, Builders' Hardware, Guns, Cutlery, and here also is the packing room. Tinware and Harness divide the fifth floor, while the floors above contain the more bulky goods and duplicate stocks.

Throughout the entire building no expense has been spared to make the plant the best and most complete possible for convenient handling of goods and prompt shipment of orders. The cement and slow combustion type of architecture was used, the foundation walls and supporting pillars of the first four stories being of concrete reinforced by steel tie rods of great strength. Heavy fire walls divide the building into four sections, while a sprinkler system fed from a 30,000-gallon tank completes a scheme of fire protection which enables the company to obtain a very low rate of insurance.

The business of this company was established in the early 70's as Anderson, Bullock & Scofield, who dealt in iron, steel and Heavy Hardware. In 1884 the business was incorporated as Hansen-Van Camp Company, moving to a newly erected building, which was thought to be large enough for many years. In 1893 the charter of the company was surrendered and the business was reincorporated under the present title. The business has grown rapidly and warehouse after warehouse was added until at the time of removal to the new structure six warehouses in addition to the store building were crowded with goods.

KEUFFEL & ESSER COMPANY'S NEW CATALOGUE.

THE KEUFFEL & ESSER COMPANY, 127 Fulton street, New York, manufacturer and importer of drawing materials and surveying instruments, has just issued a new revised edition of its trade catalogue, containing 546 pages. Not only has the entire book been copyrighted, but about 400 of the illustrations have been separately copyrighted, together with much of the descriptive and explanatory matter. In the front are views of the company's several branches in Chicago, St. Louis and San Francisco, together with a page view of the extensive Hoboken factory, located on two large squares, and exterior and interior views of the main store in New York. The book is a most comprehensive one, illustrating and describing in great detail the multitudinous goods pertaining to the line. There is also published separately catalogues of nautical instruments, instruments for forest work, lists of drawing instruments for schools, &c., and of measuring tapes for the Hardware trade. The St. Louis and San Francisco branch houses

have been removed to much larger quarters and the branch in Chicago has been remodeled and refitted.

REQUESTS FOR CATALOGUES, &c.

The trade are given an opportunity in this column to request from manufacturers price-lists, catalogues, quotations, &c., relating to general lines of goods.

REQUESTS for catalogues, price-lists, quotations, &c., have been received from the following houses, with whom manufacturers may desire to communicate:

FROM HAMP WILLIAMS HARDWARE COMPANY, successor to Hamp Williams, Hot Springs, Ark., carrying on a wholesale and retail business in Hardware, Stoves, Tinware, Agricultural Implements, Sporting and Athletic Goods.

FROM THE J. W. WOLVERTON HARDWARE COMPANY, Lawton, O. T., which has been incorporated with a capital stock of \$25,000. The company will carry a retail stock of Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils, Sporting and Athletic Goods, Seeds, Harness and Wagons. It will also conduct a plumbing and tin shop.

FROM GEORGE M. ANDERSON, successor to Anderson Bros., Inwood, Iowa, who will carry Shelf Hardware, Stoves, Tinware, Sporting and Athletic Goods.

FROM WM. BLANNING, Williamstown, Pa., who has purchased the store of Amos Lebos, retailer of Stoves, Tinware, Hardware and Plumbers' Goods.

FROM V. JELINEK, 624 West Twenty-sixth street, Chicago, Ill., who carries Hardware, Tinware, Oils and Paints.

FROM C. E. HASTED, who has purchased the business of C. B. Jockisch, Shelby, Neb. He will carry Hardware, Stoves, Tinware, Paints, Oils, Sporting and Athletic Goods.

FROM ROMAINE HARDWARE COMPANY, Hackensack, N. J., retail Hardware, Tools, Paints, &c.

DEATH OF CHARLES HAGER.

CHAS. HAGER, a pioneer manufacturer, and president of the C. Hager & Sons Hinge Mfg. Company, St. Louis, Mo., died February 21, after an illness of only a week. Mr. Hager was born in Germany in 1831 and came to America in 1855. He arrived at New Orleans in a sailing vessel and made his way from Cairo, Ill., to St. Louis by wagon. Immediately after reaching St. Louis he engaged in the manufacture of Hardware and succeeded in developing a good business. For the past 15 years Mr. Hager had retired from very active work, although keeping a general oversight of his interests. He was largely interested in real estate. Mr. Hager was married early in life to Miss Margaret Diehner, who died in 1887. He is survived by four sons and three daughters. Charles Hager, Jr., is secretary and A. W. Hager is treasurer of the Hinge Company.

P. H. MEYERS, who as city salesman is attached to the New York branch of the Joseph Dixon Crucible Company, 66-68 Reade street, is giving special attention to the Hardware, Sporting Goods and Automobile and Cycle Supply trades, in connection with such articles of this company as are handled by merchants in these lines in the metropolitan district. The goods most largely taken are full assortments of Pencils for any purpose from Lumberman's Crayons and Carpenter's Pencils to the finest grades of Artists' Pencils, Erasers, Stove Polish, Paints, Axle and Lubricating Greases and Cycle Lubricants. Mr. Meyers is thoroughly equipped for this service, having been with the company since 1880 and since 1884 in the New York store in various capacities, the last six or seven years being devoted largely to outside selling.

Correspondence.

The Western Heavy Hardware Jobbers' Catalogue.

To the Editor: My good friend W. M. Thompson takes exception to the comments made in *The Iron Age* regarding the Western Heavy Hardware jobbers' catalogue, and inasmuch as he is laboring under a misapprehension, I take pleasure in correcting the same.

No one connected with the company I represent was approached in any way to contribute to this worthy cause, neither did we solicit or desire representation therein, and had we been "invited" would have flatly refused to donate, as we consider it valueless and in a class with "Fads and Fancies."

I acknowledge my ignorance regarding the merits of this exceptional volume, but past experience has taught us that catalogue advertising is mighty expensive, considering the returns, and has never paid, although we have invested to our regret and learned our lesson, which should be valuable, for they tell us "boughten experience is the best teacher, if it does not cost too much."

Thinking possibly I might be biased in regard to this special proposition, I personally inquired of two of the largest general Hardware jobbers in the Middle West, located in the territory covered by the association getting out this catalogue. They are thoroughly up to date and know what they are about all the time. They did not go into the subject with me at length, and their replies were so brief and to the point that I quote them entire. The first said, "It is too ridiculous to receive serious consideration." The second said, "The thing is absolutely rotten." For the opinion of these two jobbers in different cities we have great respect, and after hearing their comments and recalling your conservative editorial in regard to the same, I felt I had made my criticism entirely too mild.

Mr. Thompson's article sheds new light on the subject, which would indicate the catalogue will be less valuable (if this was possible) than at first supposed. No jobber's name on the book, no manufacturer's address, simply an orphan, and Mr. Thompson refers to the "jobbers' own catalogues," &c., in addition thereto.

How valuable (?) this catalogue will be to the retailer and blacksmith as a reference book. He finds an article he needs, does not know which jobber has it or who makes it, and for the desired information goes back to the regular jobber's catalogue.

Many retail Hardware merchants have in the past made their own shelving and their own Hardware shelf boxes and cut illustrations from Hardware catalogues and labeled the boxes. These illustrations are carefully trimmed so nothing but the picture shows; no advertising results therefrom. This new proposition, the Western Heavy Hardware jobbers' catalogue, would answer this purpose most admirably.

Nearly every retail Hardware merchant of the Middle West has from three to ten large Hardware jobbers' catalogues, some of which are not opened once a year.

We all know how little one values articles that are free, that are given to any one for the asking, no matter how costly the items may be, and I have often thought the retailer would prize the large Hardware catalogue much more, use it more carefully and frequently and keep it up to date by pasting therein the inserts and circulars of new goods and new lists sent out at regular intervals if a moderate charge was made for the same.

I am not surprised that "space" in this proposed catalogue under the plea of advertising was taken, as we are passing through an advertising age, and although I thoroughly believe in good advertising I am free to confess more money is wasted than legitimately expended in advertising to-day.

Advertising graft is being worked to the limit, and some of the promoters, like Mr. Thompson, get so enthused and fascinated over their work that they honestly believe that they have a legitimate proposition and are able to convince others, when in reality no more returns

can come therefrom than chasing after the reputed pot of gold at the end of the rainbow.

Since writing you yesterday, replying to Mr. Thompson's communication (in *The Iron Age*, February 15) regarding the Western Heavy Hardware jobbers' catalogue, I have noted with interest the article signed "A Member of the Association," in *The Iron Age*, February 22, which changes the situation entirely.

The severe criticism heard on all sides was due largely because of the *personnel* of the members of this association. They are considered among the clearest, best and most far-sighted business men of our country, and for them as an association to advocate so unreasonable a proposition caused serious consideration, as it was supposed practically all the members were in favor of the same.

We did not intend to do the individual members an injustice, neither did we do the subject justice, as formerly understood, and hasten to apologize to those who are not in accord with the proposed hold-up, and only regret we are not able individually to separate the sheep from the goats.

ED. FORD.

Hardware Prices in 1867.

To the Editor: Referring to the letter of Belknap Hardware & Mfg. Company of Louisville, Ky., dated February 14 and published in your issue of March 1, I venture to suggest that it has lost sight of an important factor relating to prices in vogue in 1867. It is well known that prices were at that time enormously inflated, owing to the fact that the country was on a paper and not a gold basis as now. The price of gold in February, 1867, was 140, so that in order to bring the Messrs. Belknaps' prices down to a gold standard the premium on gold should be taken into consideration, which would very materially alter the situation. I also think the Belknap Company will readily admit the average profits obtainable 39 years ago were distinctly greater than can be obtained at the present time, and this difference, whatever it is, should be considered, but as the Messrs. Belknap do not give their present selling prices it is difficult for people not familiar with such prices to arrive at a proper comparison. Of course I quite understand the Messrs. Belknap would object to publishing their present selling prices, but it seems to me that publishing inflated prices of 39 years ago and not current prices leaves the matter in a fog to those outside the trade who would like to know the real difference between now and then.

A. H. SAXTON.

NEW YORK, March 5, 1906.

ABERCROMBIE & FITCH COMPANY.

THE ABERCROMBIE & FITCH COMPANY, for several years at 314-316 Broadway, New York, has just moved into the recently renovated store at 57 Reade street, one door from Broadway and close to its old address. The company was compelled by its largely increased business to secure much more space, and has taken the entire building, which has been remodeled to meet its requirements. The four lower floors, each 75 x 25 feet, are now being occupied as sales and stock rooms and office. The three upper floors will be used for factory and manufacturing purposes, the company making a specialty of everything needed by hunters, prospectors and explorers. Some idea of the diversity of this product is indicated by the size of its last illustrated catalogue and price-list of 300 pages, showing complete outfits for sportsmen, campers, government and private expeditions, and all kinds of outfitting for professional, commercial or recreative outings, in all latitudes or any country, from portable houses, tents, sleeping bags, clothing and light, compact camp utensils, arms, ammunition and tackle, to concentrated foods, including powdered milk, cream and egg, that will keep indefinitely in any climate, it is said.

CATALOGUE HOUSE COMPETITION.

THE following address on the subject of catalogue house competition was delivered by W. P. Bogardus of Mt. Vernon, Ohio, president of the National Retail Hardware Association, at the annual convention of the Connecticut Retail Hardware Association, held at New Haven on February 27 and 28:

A solution of the catalogue house question in its various ramifications has a good deal to do with the future success of the retail trade of this country. And while some may be very tired of the subject it is one that will not rest or be quiet until it has been settled and settled right. There is a good deal of talk about the rights of this and that party in the controversy. Some have taken the position that the catalogue houses are here to stay; that they are legitimate and as proper as any line of business; that the agitation of the question is simply to make them stronger and more widely known; that we cannot do anything and that we are wasting our time in bothering with them; that they can get all the goods they want, if not at first hands then at second or third. There is a very much mistaken idea on the part of some manufacturers as to the policy of the retailers in their organizations in the several States. The first organization was started to fight against the

DESTRUCTIVE METHODS

of doing business by catalogue houses. We all know that it has ever been their policy to undersell and undermine the retail trade; that they have based their claim to public consideration on the claim that they are price cutters; to undersell the retailer that they might create doubt in the minds of the consumers and so undermine the confidence necessary to carry on business. The foundation of their success has always been the favors that have been given them. Manufacturers have taken the position that the retail trade through their organizations have undertaken to dictate to them how they should run their business, and meddling with something that did not concern them by trying to tell them how they should distribute their goods. Then they go on to say that they, the manufacturers, think that if every other method fails to coerce them there will be an effort to start a campaign of boycott.

IF A NUMBER OF JOBBERS

buy their supplies from a manufacturer at certain prices with the expectation of selling the goods to the retail trade, and the manufacturer sells to a retailer at prices that practically prohibit the jobber from selling the goods he has bought, is it dictation for the jobber to protest against such treatment? When the jobber says that he cannot stand such treatment is it not a little silly for the manufacturer to cry, "Oh, you are trying to boycott me?"

NO BOYCOTT.

There has never been any discussion or advocacy of the boycott by Hardware associations. As far as I am concerned I do not believe in it as a means to the ends we are after. The manufacturer who advances the idea must feel that he deserves to be boycotted or he would not mention such a thing. The manufacturer who takes the position that he proposes to sell the catalogue houses must not expect patronage from any one else. For what is the use of buying goods that you cannot sell? Then how silly to cry boycott when a manufacturer favors some of his trade and demands that the balance shall buy without the favors. To give a retailer the same price that a jobber gets is not fair, and for him to put any of his trade in a more favorable position than others is not equity. To demand that the catalogue houses should raise their prices is not what we want.

WHAT WE WANT

is that catalogue houses should be rated as retail stores that are price cutters and base their claim for trade on that proposition and therefore are not entitled to as good a price as even an honest retailer is given. We do not care about their maintaining fixed prices; we think the effort on the part of manufacturers to do this has resulted in utter failure. What we want is that they should pay as much as we do, and then we will take care of ourselves.

It seems to be a determination on the part of some manufacturers that the solution of this question is to get the catalogue houses to maintain prices. Again I say it is not what they sell for but it is what they *pay* the manufacturer that causes all the trouble. What is the sense in selling an article to a catalogue house at 40 cents and to a retailer at 60, and then demanding of the catalogue house that the retailer be protected by maintaining prices.

IF A MANUFACTURER'S PLATFORM

is that there is a straight road from his factory to the warehouse of the catalogue house let his stand on it like a man. He has no right to whimper or cry out boycott if other than the catalogue people do not buy from him.

It is a far cry to undertake to bring the customer into this controversy. This is a question between the manufacturer on the one side and his distributing agents on the other. And the point of the controversy is that it is not fair or just or equitable for the manufacturer to show favors; to give prices to some of his customers that he does not give to the balance. The manufacturer does not want to see this point and he dodges by saying that the catalogue house is in some cases a larger buyer than any single jobber, and he pays cash. But when told that he is not a jobber and that nine-tenths of his output goes through the jobbers, therefore the catalogue house should not have the price given the jobber, the only reply is, "Well, he buys a lot of goods, and the man who buys the lot gets the price."

THE IMMORALITY OF THE POSITION

does not seem to strike the manufacturer. To say to your opponent, "You're another," has never appealed to me as a very strong argument. To seek to justify a wrong by saying that the beam in the other's eye is greater than the mote in mine, and should be removed first, is but a shuffle to hide the real issue. Why should prices be given one-tenth of a manufacturer's trade that are lower than those given to the other nine-tenths? Why should prices be given a retailer that will enable him to sell as cheap as the jobber?

THE SUGGESTION

from the manufacturer that the retailer should keep up his store; assort his stock; study the needs of his constituents; advertise so as to keep his name before the public; take hold of the new things, and then he will not be bothered by the catalogue house, is talk that would not be indulged in if he had any adequate conception of the conditions existing in the country. It certainly shows a want of knowledge of the true inwardness of the situation for a manufacturer to say that the catalogue houses are a convenience if not an economy, and that the only way to get rid of them is to educate the people not to buy of them. If they are a convenience and an economy what argument are you going to use to teach the people so that they will not buy of them?

IS THE BLAME

on the manufacturer or jobber or retailer because he happens to have a surplus and sells it at a sacrifice to get some ready money? Not a bit of it. For fluctuations in business and prices have been going on since the year one and will continue while the world lasts, and men who go into business realize it. But the blame for this disturbance in business lies at the door of every manufacturer who favors the catalogue houses in prices, knowing full well that the jobber who buys of them cannot live and sell his goods to the retailer. Until the manufacturer will take other conditions into the sale of his goods than quantity the fight will go on.

IT IS TRIVIAL

to cite the case of one retailer who charged two and a half times the cost of his goods as a reason for the existence of the catalogue house. It is the prices the catalogue house gets from the manufacturer that enable it to thrive. The solution of this question is not with the consumer. Let the manufacturer give all retailers the same price and they will take care of the consumer. Competition is too sharp for excessive profits, and the citation of a single case is but begging the question.

TREAT ALL ALIKE

and there will be an end of the trouble, for it is favoritism that makes the trouble. It will not do for the manufacturer to say to the retailer, Go to the consumer and convince him that the retail Hardware merchant can render better, more efficient and as economical service as the catalogue houses and you have nothing to fear from their competition. Let the manufacturer give us the price and treat us as he does the catalogue house and we will not fear this or any other competition.

The Rusch & Hirth Hardware Company has been incorporated at Fond du Lac, Wis., with a capital stock of \$12,000, Henry Rusch, Charles M. Hirth and W. J. Steiner being the incorporators.

R. N. Hurlbut has purchased the retail stock of C. M. Olson in Hartington, Neb., and will carry Hardware, Stoves, Tinware, Agricultural Implements, Paints, Oils and Sporting Goods.

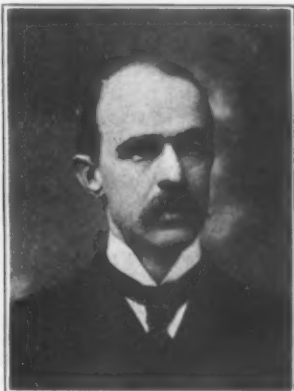
New England Hardware Dealers' Association.

THE annual convention of the New England Hardware Dealers' Association was held at Hotel Vendome, Boston, Thursday and Friday, March 1 and 2. The meeting was an unqualified success, amply justifying the change from a one to a two days' convention session. The programme alternated pleasantly between business and pleasure, the two sides of the convention being cleverly combined. The business meetings afforded opportunity for the discussion of questions vital to the trade at this time.

The convention was notable for the increased membership both on the rolls and at the meetings and especially for the presence of merchants from all parts of New England, including distant points in the Northern States.



J. B. HUNTER.



S. H. THOMPSON.

The presence of President W. P. Bogardus of the National Retail Hardware Association, who was making his first visit to New England, was much appreciated.

A business session opened the convention Thursday afternoon, followed by a smoker, to which manufacturers of Hardware were welcomed. After a stag supper the party attended the theater. A business meeting occupied Friday morning. In the afternoon the members and guests made a tour of Boston and Harvard University in special electric observation cars. The convention closed with a reception and banquet, at which many ladies were present.

Most of the time of the business sessions, at which President John B. Hunter presided, was given over to the private discussion of important trade topics, including the Parcels Post bill, Hardware mutual fire insurance, the rescinding of the rule by which manufacturers of Builders' Hardware made an additional charge of 10 per cent. on orders figured and made up at the works, and various other matters of general importance.

The annual report showed the association to be in an exceedingly prosperous condition. Secretary F. Alexander Chandler in an informal report stated that the membership had doubled during the past year. Mr. Chandler launched a plan for the establishment of a Hardware dining club for Boston, with commodious quarters.

Election of Officers.

A committee on nominations was elected from the floor, consisting of A. H. Abbe, New Britain, Conn.; F. Alexander Chandler, Boston, and E. L. Davis, Boston. The committee brought in the names of an enlarged executive committee, the association having voted to add two members. The officers were elected, according to the committee's recommendations, as follows:

PRESIDENT, John B. Hunter, J. B. Hunter & Co., Boston.
FIRST VICE-PRESIDENT, S. H. Thompson, Thompson Hardware Company, Lowell, Mass.
SECOND VICE-PRESIDENT, F. E. Peirson, Peirson Hardware Company, Pittsfield, Mass.
SECRETARY, F. Alexander Chandler, Chandler & Farquhar Company, Boston.

TREASURER, Henry M. Sanders, H. M. Sanders & Co., Boston.

DIRECTORS.—D. Fletcher Barber, Chandler & Barber, Boston; Charles E. Adams, Adams Hardware & Paint Company, Lowell, Mass.; Bion C. Pierce, Pierce Hardware Company, Taunton, Mass.; Calvin M. Nichols, the Hoyt Company, Boston; E. L. Davis, S. H. Davis Company, Boston; John A. Manson, John A. Manson & Co., Burlington, Vt.; W. H. Underwood, Manchester Hardware Company, Manchester, N. H.

The matter of sending delegates to the convention of the National Association at Chicago was left to the Executive Committee.

The smoker on Thursday afternoon was made especially interesting by the presence of President Bogardus, Samuel A. Bigelow, former president of the National Hardware Association; T. James Fernley, secretary-treasurer of the National Hardware Association, and J. B. Sargent of Sargent & Co., New Haven, Conn. Mr. Bogardus read a paper on the proposed changes in the postal laws, in part, as follows:

Mr. Bogardus' Address.

At first the mail of the people was carried by private enterprise, but owing to the delays and expense of private carriage it was deemed a wise thing for Government to undertake the distribution of the mail—letters and papers—to the people; and among the arguments used to justify the action was the fact that much of the mail was business mail, and therefore identified with the commerce of the country and its upbuilding, and therefore it was to the interest of the Government that the mail should be promptly distributed and carefully guarded.

TO LEAVE IT IN PRIVATE HANDS

meant that the Government would not have as complete control over the letters as it would have should it undertake the distribution itself. And then, too, laws could be passed safeguarding the mails that could not be enforced if left in the hands of private individuals. And so the carrying of the mails became a duty of the Government. On July 26, 1775, the American Congress assumed the direction of the postal service. Until 1846 postage was paid

ACCORDING TO DISTANCE,

3 cents under 300 miles and 10 cents over. In 1851 the law was changed so that for 3 cents a letter could be sent 3000 miles, and over that distance 10 cents. In 1856 prepayment by stamps was made compulsory. In 1863 3 cents was the rate for any distance. Since then it has been reduced to 2 cents per ½ ounce.

DURING THESE CHANGES

there have been many schemes started by interested persons who hoped to use the Government to help them develop their personal ends. At first there was but one class of mail matter, but this was changed so that now we have four: First class, letters and



F. ALEXANDER CHANDLER.



HENRY M. SANDERS.

postal cards; second, papers and magazines; third, books, and, fourth, merchandise.

Last year about 70,000,000 pounds of letters and postal cards went through the mails, and the income was about \$70,000,000, or about \$1 per pound. In the second class there was distributed 365,000,000 pounds, and the income was about \$3,000,000, or a little over 1 cent per pound.

THE LOSS

on carrying that amount of second-class matter was over \$40,000,000. First-class matter furnished 80 per cent. of the postal income and used only 4 per cent. of the tonnage. Second-class matter furnished a little over 4 per cent. of the income and took 65½ per cent. of the tonnage. And third and fourth class matter almost paid their way.

IS THERE ANY REASON

why letters and postal cards should bear the burden of the other class of mail? There was a time when the Government might have been justified in giving special rates to papers and magazines. But when it is remembered that the common school is in every community, and an education such as our fathers could not get is to be had for the going to school, the old argument that the paper and magazine were educators and were doing a great work in the development of the people has lost much of its force.

DO YOU WONDER

that the magazines refuse to discuss the other side of the post parcels question but are ready to print anything lauding the value of post parcels and kindred schemes? Now who pays for all this? Four-fifths of every 2-cent stamp you put on your



D. FLETCHER BARBER.



F. E. PEIRSON.

letters goes to make up the deficit occasioned by the hauling by the Government of these periodicals. Some of these have a circulation of 1,000,000 copies and a pair of scissors for an editor, filled to overflowing with advertisements. During the year 1904 there was hauled 600,000,000 pounds of second-class matter; 300,000,000 pounds of that was advertisements. The loss to the Government for hauling this mass of stuff was over \$12,000,000.

IS THIS ADVERTISING OF SUCH VALUE

to the public that the Government is justified in paying such an amount? Why, even the magazines, in spite of the profits from their advertising, are beginning to have scruples as to the wisdom of allowing any kind of advertisements going into their publications such as beer, whisky, champagne, cures for all the ills that man is heir to, and a thousand and one indefensible schemes to inveigle the people and rob them of their money. Why should the Government help, by paying four-fifths of the expense, to spread this advertising over the country?

And now in addition to this graft—and favoring some to the exclusion of others is always a graft—it is proposed

TO POIST ANOTHER GRAFT

on the public, in the shape of a post parcels that will carry parcels up to 11 pounds that shall not exceed 3½ feet in length nor in length and girth combined 6 feet. It is proposed to carry 1 pound for 5 cents and for every additional pound 2 cents up to 11 pounds, which shall go for 25 cents. A scheme started by the Third Assistant Postmaster-General to consolidate third and fourth class matter, if carried through, would make an 11-pound package cost 88 cents. Even at that rate it is admitted that it is carrying merchandise in the mails at a loss. Where is the sense of the Government undertaking to carry any more in the mails at a loss? Is there any business equity in such a proposition?

WOULD BENEFIT (?) THE MERCHANT.

A certain magazine writer in advocating the above scheme says that a post parcels would greatly benefit the country merchant. And he goes on to say, with his—the country merchant's—insufficient capital, and distance from wholesale centers, and the cost of express on small parcels he is greatly handicapped. But if there was a post parcels he would be in touch with the great wholesale distributing agents of the country, and when a customer came in for some article that was not in the merchant's stock he could get his catalogue and show his customer the price and an illustration of the article wanted. And as the country merchant is in such close touch with his trade and they are all his good friends he could send away and get the article wanted, and with a reasonable profit could still keep his trade.

Why could not the customer send away and get the goods and save the reasonable profit of the merchant? The low cost of transportation would enable the large stores in the cities to sell lower than the country merchant could, and so take away his trade. The difference between the cost to the country merchant and the price in the city with the transportation added is all the protection the country merchant has. To eliminate that means ruin for the country merchant.

Our magazine writer goes on to say, what a fine thing post parcels would be

FOR THE MANUFACTURERS.

Instead of having to carry great stocks scattered over the country in the shape of extended credits to the jobbers they could ship direct to the consumer. This method would wonderfully simplify the business of the jobber, for all that he would have to do would

be to send the orders to the manufacturers and they would pack and ship the goods. If the scheme proposed of letting the manufacturer pack and ship the goods to retail dealers is such a fine thing, why is it that a very loud and vigorous protest is being made by manufacturers on this very point?

THE FARMER.

Last but not least, says our magazine writer, comes the farmer. He is the victim of bad government, both in bad roads and lack of postal facilities. Rural free delivery is ridiculous unless coupled with post parcels. Why, how nice it would be if the farmer could send to the country merchant for such goods as he may want, and in a few hours have them delivered to him. Would the enactment of a post parcels law make the roads any better? Who makes the roads in the country? The farmer has just such roads as he makes, no better, no worse. Will there be a rural route man at the office to grab any package that may come in and rush away to deliver it, or will the packages wait and go out on the regular trip at the regular time?

The argument of our magazine writer, if we may dignify it as such, is childish. Certainly no business man would advance such statements as valid reasons for revolutionizing the transportation facilities of the country. Will a Government employee work better than an employee of a private corporation? They never have. With this additional burden thrown on the Post Office Department does it not mean an army of men to carry on the work? Will they not need wagons and horses to do the work? What would be the conditions if all the work now done by express companies and delivery wagons all over this country should be turned over to the Post Office Department?

GERMAN PARCELS POST.

Ah, says our magazine writer, if we but had the German post parcels then we would be fixed. All packages under 11 pounds go free. The railroads in Germany are owned by the Government for Government use. The people are a secondary consideration. If there should be 100 packages of 11 pounds each and 1100 pounds of other merchandise in the same car, why should the packages go free and the merchandise be charged freight? Does it not require power to move packages as well as to move merchandise?

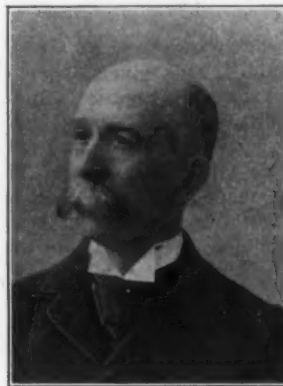
In the much vaunted system of German post parcels the rate on periodicals is 5 cents per pound and 7½ cents for two pounds, and the average distance they are carried is 40 miles, while in the United States the average distance is 442 miles. Now if in Germany it is worth 5 cents to carry a pound 40 miles, how much will it be worth in this country to carry it 442 miles?

But our magazine writer says that the transportation question is a very small matter. Why, he says, our Government has been carrying packages of periodicals for the last 20 years at 1 cent per pound in parcels up to 250 pounds, and therefore it can carry merchandise at the low prices they are suggesting.

HE COOLLY IGNORES THE FACT

that during all that time the Government has been losing from 4 to 15 cents on every pound it has sent out, and that the annual deficit for that reason has run into millions. Because the Government is doing business at a loss is it any reason why it should continue or go into other schemes that will result in still greater loss?

While I recognize the fact that the Government is not a business Government organized to make money, I also recognize another fact that the Government was not organized to lose money



CHAS. E. ADAMS.



CALVIN M. NICHOLS.

that any class should be benefited at the expense of other classes of citizens. We submit that when the Government helps the big stores in the cities by paying any part of their transportation expenses that it is doing a wrong to the people at large and is not justified in so doing.

Other Addresses.

T. James Fernley brought the greetings of the National Hardware Association, and told of the work of the association. He was followed by J. B. Sargent, who was given a very hearty reception, indicating the high appreciation in which he is held. Mr. Sargent made an interesting and able address, in which he referred to some of the questions connected with the distribution of Hard-

ware, and alluded to the desirability of marketing goods through the retail merchants.

The Banquet.

Over 200 ladies and gentlemen enjoyed the banquet Friday evening. At the guest table were President J. B. Hunter, who acted as toastmaster; President Bogardus, T. James Fernley, J. B. Sargent, Samuel A. Bigelow of the Bigelow & Dowse Company, Boston, former president of the National Hardware Association; R. R. Williams, Hardware editor of *The Iron Age*; Charles E. Adams of Lowell, president of the Massachusetts State Board of



BION C. PIERCE.



W. H. UNDERWOOD.

Trade; William H. Sayward, secretary and treasurer of the Master Builders' Association of Boston; William A. Barrett, president of the Boston Common Council, who represented Mayor Fitzgerald; Rev. Eugene R. Shippen, Dorchester, and F. Alexander Chandler. President Barrett responded to the toast, "Boston"; President Bogardus, "The National Retail Hardware Association"; Charles E. Adams, "The Ladies"; Mrs. S. H. Thompson, Lowell, "For the Ladies," a graceful and pleasing feature of the occasion; J. B. Sargent, "The Manufacturers"; R. R. Williams, "The Trade Press"; Rev. Mr. Shippen, "The New Man"; Mr. Fernley, "The National Hardware Association." It was a most delightful evening, a fitting ending to a gathering of New England Hardware merchants which was full of promise of good work to come as well as a demonstration of good work done.

Those in Attendance.

Those present during the convention included the following:

W. P. Bogardus, Mount Vernon, Ohio, president National Retail Hardware Association.
T. James Fernley, Philadelphia, secretary-treasurer National Hardware Association.
J. B. Sargent, Sargent & Co., New Haven, Conn.
L. H. Pease, Stanley Works, New Britain, Conn.
Charles B. Parsons and E. G. Huntington, P. & F. Corbin, New Britain, Conn.
Robert M. Parsons, Stanley Rule & Level Company, New Britain, Conn.
J. B. Hunter and Ernest H. Robinson, J. B. Hunter & Co., Boston.
Frank Chandler, C. S. Farquhar, F. Alexander Chandler and R. J. Lynd, Chandler & Farquhar Company, Boston.
W. A. Chandler and D. Fletcher Barber, Chandler & Barber, Boston.
David B. Williams, William S. Burditt, J. H. Williams, Leonard B. Allen, W. G. Hutchins, John V. Twomey, A. J. Munroe, M. D. Burke, Harry W. Penton, Charles G. Noyes, W. H. Stevens, H. W. Colton, J. T. Newcomb, W. J. Armstrong and F. B. Brown, all of the Burditt & Williams Company, Boston.
Frank M. Smith, R. L. Von Buskirk and A. M. Wiley, Frye, Phipps & Co., Boston.
George O. Cutler, J. D. Burrell and Lucius D. Crispin, with W. Bowman Cutler, Boston.
Henry M. Sanders, D. O. Eaton and H. E. Stockbridge, H. M. Sanders & Co., Boston.
Ernest L. Davis, S. H. Davis Company, Boston.
Henry E. Brown, Brown Bros., Boston.
Stanley H. Coffin, Boston.
Fred W. Brown, Graves, Brown & Co., Boston.
Franklin K. Brown and A. J. Campbell, with F. K. Brown, Boston.
Arthur W. Bennett, Baldwin & Robbins Company, Boston.
A. H. Abbe, A. H. & E. W. Abbe, New Britain, Conn.
J. D. Phelps, F. S. Bidwell Company, Windsor Locks, Conn., secretary Connecticut Hardware Association.

F. A. Farrar, F. T. Blish Hardware Company, South Manchester, Conn., financial secretary Connecticut Hardware Association.
Fred H. Marr, King & Dexter Company, Portland, Maine.
John G. Hamblin, Wales & Hamblin Company, Bridgton, Maine.
John A. Manson, John A. Manson & Co., Burlington, Vt.
Charles H. Landon and W. F. Burbank, W. C. Landon & Co., Rutland, Vt.
J. A. Harrington, J. A. Harrington & Co., Vergennes, Vt.
S. E. Pope, Jeffersonville, Vt.
W. H. Underwood, Manchester Hardware Company, Manchester, N. H.
J. H. Sayward, Haverhill, Mass.
Charles E. Adams, Adams Hardware & Paint Company, Lowell, Mass.
S. H. Thompson, Thompson Hardware Company, Lowell, Mass.
G. C. Winter, Southbridge, Mass.
F. E. Carlisle, Carlisle Hardware Company, North Adams, Mass.
F. E. Peirson, Peirson Hardware Company, Pittsfield, Mass.
J. H. Raymond, Haverhill, N. H.
Warren H. Willard, W. H. Willard Company, Worcester, Mass.
Elwood Adams, Worcester, Mass.
John McGlinchey, Olneyville, R. I.
H. L. Russell, J. Russell & Co., Holyoke, Mass.
Nathan Ames, Hardware Supply Company, Quincy, Mass.
Frank W. Mendum, Roxbury, Mass.
Charles A. Green, Dorchester, Mass.
J. C. Nichols and C. M. Nichols, Hoyt Company, Dorchester, Mass.
Ernest A. Mason, Presbrey-Mason Company, Taunton, Mass.
William T. Garwin, Garwin Hardware Company, Leominster, Mass.
F. W. Richardson, E. M. Richardson & Co., Waltham, Mass.
J. A. Higgins, Waltham, Mass.
Arthur C. Lamson, Marlboro, Mass.
John H. Robinson and S. M. Robinson, J. H. & S. M. Robinson, Hudson, Mass.
H. C. Fay, Athol, Mass.
Charles E. Platt, Platt & Gosler, Great Barrington, Mass.
A. W. Whitcomb, Whitcomb-Carter Company, Beverly, Mass.
G. W. Bartlett, Cambridge, Mass.
Thomas Hadley, Moore & Hadley, Cambridge, Mass.
J. P. Mackey, Brockton, Mass.
A. B. Reed, North Abington, Mass.
M. A. Durkee, Natick, Mass.
E. O. Pratt, Clinton, Mass.
John Daland, Jr., Daland Company, Inc., Salem, Mass.
Charles L. Underhill, Underhill Hardware Company, Somerville, Mass.
N. P. Hayes, New Bedford, Mass.
E. C. Howard, Whitman, Mass.
J. E. Farrell, Hyde Park, Mass.
R. R. Williams, *The Iron Age*.
Walter C. English, *The Iron Age*.
John Nelson, *The Iron Age*.
W. E. Plumer, W. E. Plumer & Co., Somerville, Mass.
Augustus Young, Exeter, N. H.
Blon C. Pierce, Pierce Hardware Company, Taunton, Mass.
J. F. Weltell Hardware Company, Roxbury, Mass.
Henry G. Fiske, Fiske & Co., Natick, Mass.
Ferdinand Bray, A. F. & F. Bray, Pawtucket, R. I.
L. A. Dietrich, J. G. Fletcher and A. W. Froude, American Steel & Wire Company.
J. H. W. Brinley, Union Metalle Cartridge Company, Bridgeport,



ERNEST L. DAVIS.

Conn., and Remington Arms Company, Ilion, N. Y.
G. K. Simonds, J. E. Kelley, George T. Curtis and F. T. Howarth, Simonds Mfg. Company, Fitchburg, Mass.
James Kinsman, North Bros. Mfg. Company, Philadelphia.
David Murdock, Bay State Tool Company, Boston.
S. J. Steinmetz, Ruppman Door Holder Company, Boston.
Hardware Agents' Company, Boston.
C. L. Henderson, Woodstock, Ont.
J. H. Crocker, J. H. Prince Paint Company, Boston.
B. L. Almada, Estate of P. D. Beckwith, Dowagiac, Mich.
H. G. Morse and Walter T. Kelley, Meriden Cutlery Company, Meriden, Conn.
W. T. Read and S. J. Besse, Morse Twist Drill & Machine Company, New Bedford, Mass.
F. J. Smith, S. W. Card Mfg. Company, Mansfield, Mass.

Frank H. Foster, Gillette Sales Company, New York.
 C. H. Smith, Gillette Safety Razor Company, Boston.
 Will T. Hedges and W. M. Payson, Landers, Frary & Clark, New Britain, Conn.
 W. H. Booth, Corbin Cabinet Lock Company, New Britain, Conn.
 Fred E. Sands, Trimont Mfg. Company, Roxbury, Mass.
 J. E. Rayner and H. H. Miller, Carborundum Company, Boston.
 William W. Beal, Lunkenheimer Company, Cincinnati.
 W. E. Stevens, Stanley Works, New Britain, Conn.
 J. F. Carey and Samuel F. Perrigo, E. C. Atkins & Co., Indianapolis, Ind.
 Earle Bowman and Garry Fitch, Corbin Screw Corporation, New Britain, Conn.
 A. W. Bowman, Atlantic Screw Company, Hartford, Conn.
 A. S. Howe and W. D. Anderson, Dover Mfg. Company, Canal Dover, Ohio.
 William A. Bennett, Yale & Towne Mfg. Company, Stamford, Conn.
 E. L. Marston, Manning, Bowman & Co., Meriden, Conn.
 Garrett P. Fitch, Corbin Screw Corporation, New Britain, Conn.
 F. A. Benjamin and A. G. Bowman, Russell & Erwin Mfg. Company, New Britain, Conn.
 George R. Collier, Nicholson File Company, Providence, R. I.
 George M. Pearse, Brown & Sharpe Mfg. Company, Providence, R. I.
 H. E. Smith, Pike Mfg. Company, Pike, N. H.
 Chetwood Smith and J. E. Martin, Martin Skate Company, Boston.
 Hector M. Gordon, S. W. Gifford and B. P. Mansfield, Harrison Bros. & Co., Inc., Philadelphia, Pa.
 R. C. Goodell and C. C. Phillips, Goodell Company, Antrim, N. H.
 F. A. Ball, David Findlay and E. P. Barrus, L. S. Starrett Company, Athol, Mass.

Manufacturers' Exhibits.

There was a large representation of manufacturers and the exhibits far exceeded in number those of previous conventions held in New England.

THE SIMONDS MFG. COMPANY, Fitchburg, Mass., had a large display of Saws of all descriptions, including the company's new line of Hack Saws and Files in great variety.

MANNING, BOWMAN & CO., Meriden, Conn., had on exhibition its lines of Coffee Percolators and Chafing Dishes and the Eclipse Bread Mixer, the last being demonstrated.

THE MARTIN SKATE COMPANY, Old South Building, Boston, exhibited its new Folding Skate, which is just being placed on the market.

THE STANLEY WORKS and the HART & COOLEY COMPANY, New Britain, Conn., had a joint exhibit of the former's Butts and other Builders' Hardware and the latter's Steel Registers.

E. C. ATKINS & CO., Indianapolis, Ind., made an elaborate exhibit of its large line of Saws.

THE GOODELL COMPANY, Antrim, N. H., showed its large and widely diversified line of Knives and Cutlery specialties.

THE COBURN TROLLEY TRACK MFG. COMPANY, Holyoke, Mass., exhibited Trolley Track Hangers, through J. B. Hunter & Co., Boston.

THE MORSE TWIST DRILL & MACHINE COMPANY, New Bedford, Mass., had a showcase filled with its lines of Twist Drills, Reamers and Gauges. A feature was the company's new standard, which holds a full set of Twist Drills from 3-16 to 1 inch.

THE BROWN & SHARPE MFG. COMPANY, Providence, R. I., had an exhibit of Mechanics' Small Tools and Milling Cutters.

KAMPFE BROS., 8-12 Reade street, New York, had on exhibition the Star Safety Razor and Strops.

THE DOVER MFG. COMPANY, Canal Dover, Ohio, showed its line of Asbestos Sad Irons.

PIKE MFG. COMPANY, Pike, N. H., had a large exhibit of Sharpening Stones and Emery Wheels, embracing a wide variety.

L. S. STARRETT COMPANY, Athol, Mass., showed its line of Mechanics' Small Tools, comprising a great number of types.

UNION METALLIC CARTRIDGE COMPANY, Bridgeport, Conn., and REMINGTON ARMS COMPANY, Ilion, N. Y., had a joint exhibit of Firearms and Ammunition.

THE exhibit of the Gillette Safety Razor Company, Boston, included a new combination set of Safety Razors and accessories in addition to the regular lines.

YALE & TOWNE MFG. COMPANY, Stamford, Conn., had a room to itself, filled with the company's line of Builders' Hardware and also including the company's Triplex Block, arranged for practical demonstration.

MERIDEN CUTLERY COMPANY, Meriden, Conn., had on exhibition its line of fine Cutlery.

THE BAY STATE TOOL COMPANY, 147 Milk street, Boston, showed a new line of Wrenches, the Bay State quick acting Monkey Wrench, Burr's patent Friction Chain Pipe Wrench, several styles of Ratchet Nut Wrenches and also the Bay State Compound Leverage Belt Punch.

THE AMERICAN STEEL & WIRE COMPANY showed its line of Meshed Wire Fencing.

CARBORUNDUM COMPANY, Niagara Falls, N. Y., had an exhibit of its abrasive Wheels and materials.

NORTH BROS. MFG. COMPANY, Philadelphia, showed the American Twin Freezer, in which two kinds of ice cream may be made simultaneously, the Freezer being demonstrated; also its line of Yankee Tools.

ESTATE OF P. D. BECKWITH, Dowagiac, Mich., exhibited its Round Oak Ranges and Stoves.

HARRISON BROS. & CO., Boston and Philadelphia, exhibited its line of Paints.

MISCELLANEOUS NOTES.

Blacksmith's Tools.

The Buffalo Forge Company, Buffalo, N. Y., has just issued a new 16-page illustrated descriptive catalogue, showing complete and varied lines of blacksmith's tools. Especial attention is called by the company to some of its specialties, among which are Buffalo portable down draft forges, 4½-inch combined shear and punch, 4 B combined punch and shear and tire upsetters Nos. 2 and 3, patents for some of which have been applied for, and to the line of blacksmith's drills.

Enduroid Roofing.

The West End Mfg. Company, 73 Murray street, New York, marketing roofing felts and materials and building papers, is manufacturing Enduroid high grade roofing made in ½, 1, 2 and 3 ply thicknesses. What its maker claims for it is that it is proof against water, weather and acids and is air tight in all climates and under all conditions. It is black in color, coated on both sides when made and therefore does not require painting for the first two or three years. As it is always pliable the point is emphasized that it is easily applied. It is marketed in rolls 36 inches wide, containing two squares or 216 square feet. In price the range is from \$1.75 to \$4 per roll with discounts conditioned on quantities of from 20 to 30 per cent. from list.

Hutchins Roller Swing.

James S. Barron & Co., 200-204 West Broadway, New York, are distributing in New York State the Hutchins roller swing, made by the Hutchins Roller Swing Company, Alton, Ill. It is made of oak and yellow pine and steel, finished in red and black. It is 8 feet long and 33 inches wide; actual weight of swing alone 156 pounds and with tilting canopy top 171 pounds. There is a lower platform with two short concave tracks on each end, and on this is placed the foot platform, which is hung on four flanged wheels. The upper platform carrying the seats has at each corner a convex steel track riding upon the circumference of the flange wheel of the foot platform, giving an easy motion like the ball bearings of a bicycle. A slight movement of the feet swings the upper platform 2 feet each way and without any uncomfortable seasick feeling. It can also be supplied with table and fan attachments, the motion of the swing driving the fan without appreciable effort. Slatted back seats are provided with steel arms, each facing the other, and capable of holding two in each seat, with room for two or more standing at each end. There is a table in the center on which to play checkers, backgammon, cards, &c., or it can be used for a tea party or holding other refreshments. It is suitable for lawn or park and can be placed on a piazza or porch, the canopy being instantly adjustable at any angle to shield against the sun.

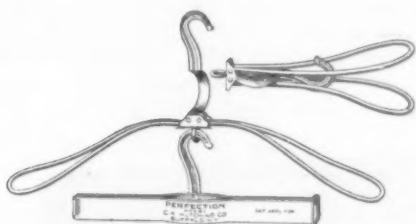
Auto Graflex Camera.

The Folmer & Schwing Company, formerly corner Broome and Elm streets, New York, now at Rochester, N. Y., has just issued a new catalogue illustrating and describing the Auto Graflex camera. This particular style of camera is an outgrowth of the original Graflex camera, manufactured by this company since 1901. The feature of the Auto Graflex is that it is a light and compact camera of special construction that allows the individual to see the image on the ground glass screen full size and right side up at the instant of exposure. This is accomplished by means of an optical mirror placed in the camera at an angle of 45 degrees, reflecting the image from the lens upon a ground glass placed at the top of the camera. The reflecting mirror is supplemented by an additional mirror in the top of the focusing hood which enables the user to hold the camera level with the eyes or at a lower elevation at will. The additional mirror also permits of reversing the camera for making vertical

pictures. The Auto Graflex focal plane shutter, peculiar to this camera, is also new and allows of practically instantaneous changes of aperture and tension. Many other technical details are explained and many pictures of rapidly moving objects shown which were taken with this instrument. While designed especially to catch rapidly moving objects, it is also equally well adapted to other classes of work, as, it is said, it eliminates the estimating of distance and insures correct focus and the proper recording of the image in size desired upon the sensitive plate.

Hutchins Perfection Garment Hanger.

The C. K. Hutchins Company, Buffalo, N. Y., represented in the East by the Bridgeport Wire Goods Company, 82 West Broadway, has put on the market Hutchins Perfection garment sets, here shown. The illustration shows the folding coat hanger and trouser hanger extended and connected as when holding an entire suit, the small upper right hand cut indicating the mode of collapsing the coat hanger for carrying in trunk or shipping. The coat hanger has an offset to prevent marking the coat collar, and a new feature is the slope of the two wire loops to more perfectly fit the droop of the shoulder por-

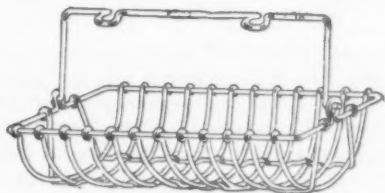


Hutchins Perfection Garment Hanger.

tions of the coat. Trousers are suspended by inserting the lower parts of legs, thus creasing them. This hanger is hinged at the left and there is a metal loop at the right to keep the two flat strips together, there being also a slight swell in the center to allow for side seams. The coat hanger is made of full No. 8 wire and all surfaces are full polished and nicked. Set No. 1 consists of one each coat and trousers hanger packed in an attractive double pasteboard box measuring outside $10\frac{1}{4} \times 3\frac{3}{8} \times 2\frac{1}{4}$ inches. There are also sets Nos. 2, 3 and 4, containing variously 2, 3 and 6 of each hanger, boxed, the No. 3 having in addition one shelf bar and the No. 4 one shelf bar and one door loop. Purchasers giving orders for one gross sets can have their name printed on boxes if desired, and freight will be allowed on orders of \$15 or over.

Ever-Level Soap Bracket.

The Bridgeport Wire Goods Company, Bridgeport, Conn., and 82 West Broadway, which makes a feature of manufacturing moderately priced, swift selling specialties, such as broilers, soap brackets and bath trays, sink cleaners and brushes, tea strainers, &c., has recently put out the Ever-Level soap bracket, No. 40, here illustrated.



Adjustable Soap Bracket for Laundry Tubs.

It is made of Bessemer steel wire, heavily tinned after it is made and is intended for profitable retailing at 10 cents. The dimensions are $6\frac{1}{2} \times 3\frac{1}{2} \times 1\frac{1}{4}$ inches, the object of it being to screw the handle or bale to the under side of cover of a laundry or stationary tub, thus keeping the soap in good condition when not in use and holding it

whether the cover is open or shut, the lower part of bracket swinging automatically as the cover is up or down.

Wiener Kettle and Tamale Can Combined.

Western Tin & Japan Mfg. Company, 1009-1013 Walnut street, Cincinnati, Ohio, has recently patented and put on the market the wiener kettle and tamale can combined, shown herewith. It is made of XXX tin, with a

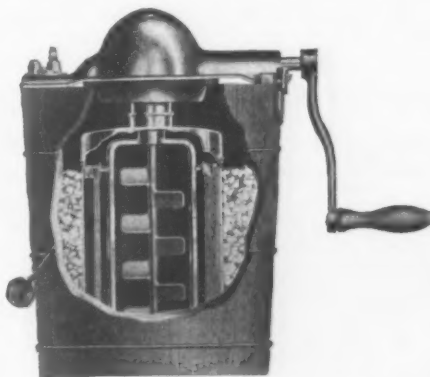


Wiener Kettle and Tamale Can Combined.

copper bottom where the flame from the gasoline burner strikes. The can is 9 inches wide, 13 inches long, and the entire depth is 11 inches, made in numbers 12 and 22. The part for holding wieners and tamales is $5\frac{1}{2}$ inches high, and in one can this space is divided in the center to keep the contents separate.

Snow Ball Ice Cream Freezer.

The accompanying illustration supplies an interior as well as an exterior view of the ice cream freezer offered by Richmond Cedar Works, Richmond, Va. The freezer has three motions, with the gearing all encased, to avoid catching the fingers of the operator or any foreign matter. The pall is made of selected Virginia white cedar, bound with electric welded wire hoops sunk in grooves. The can and top are made of heavy tin plate, the top being



Snow Ball Ice Cream Freezer.

drawn out of a single piece and having no cogs on it. The inner and outer beaters are designed to insure rapid freezing and to produce a smooth, velvety cream. The inner beater constantly beats the cream from center to sides, and the two wood scrapers cut the cream from the sides back to the center. The tub is filled with two coats of a special filler and varnish and decorated with an excellent decalomania transfer. The freezer is wrapped in paper, decorated with a lithographed label, a facsimile of the transfer on the pall. Attention is directed by the manufacturer to the large ice space in the freezer.

Automobile Pumps and Priming Cup.

The accompanying cuts illustrate devices offered by the Imperial Brass Mfg. Company, 245-247 South Jefferson street, Chicago, Ill. The centrifugal pump shown in Fig. 1 is made entirely of bronze with Tobin bronze shaft

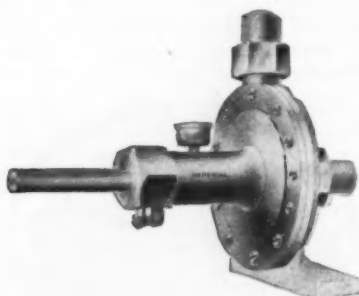


Fig. 1.—Centrifugal Pump.

bearings and $\frac{1}{2}$ -inch pipe connections. The pump is referred to as giving positive circulation and as noiseless and perfectly balanced. It is made with the base indicated in the cut or with other styles or shapes to meet requirements. In Fig. 2 an auxiliary oil pump is shown, which fits snugly to the dash board, ready for use in an emergency when the oil supply is interrupted or cut off

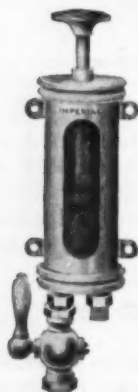


Fig. 2.—Auxiliary Oil Pump.



Fig. 3.—Priming Cup.

through accident or mishap. The pump is usually connected with a small tank, from which it draws the oil. It has two valves and a pet cock. The priming cup, Fig. 3, is alluded to as neat in design and of the finest workmanship. It is of polished brass, with polished black rubber handle.

Carpenters' and Electricians' Hand Tool Cases.

C. E. Jennings & Co., 42 Murray street, New York, have just put on the market two entirely new types of



Fig. 1.—Carpenters' Dress Suit Tool Case, No. 35, Closed.

tool cases for carpenters and electricians, patents for which have been applied for, as here illustrated. They are not only convenient for carrying about like a dress

suit case, which they resemble, but are fine in appearance. Figs. 1 and 2 show the Carpenters' Hand Tool Case No. 35, closed and open. The material is selected hard wood with paneled sides. The case is fitted with a brass lock, leather handle with rings for strap to pass over the shoulder, metal clasp and corners, saw rack for



Fig. 2.—Interior Arrangement and Fittings of Carpenters' Dress Suit Tool Case.

holding four saws to 28-inch, inclusive, including rip saw, hooks for brace and coping saw, wood button for try square and partitioned tray for bits, chisels and small tools. There is space in bottom to hold planes, levels, &c., and a steel square, full size, with 18-inch tongue, can be carried. The outside dimensions are length $34\frac{1}{4}$ inches, height 17 inches and width 6 inches. The inner



Fig. 3.—Electricians' Hand Tool Case, No. 1003, Closed.

dimensions are length 33 inches, height $15\frac{1}{4}$ inches and width 5 inches. The removable tray is $32\frac{1}{2}$ inches long, $1\frac{1}{4}$ inches high and $4\frac{1}{4}$ inches wide. The case weighs empty about 15 lbs. and for shipment is crated in sixes weighing about 100 lbs. Figs. 3 and 4 illustrate the Electrician's Hand Tool Case No. 1003. It is made of hard wood and handsomely finished. It is furnished with brass lock, leather handle and rings for shoulder strap,

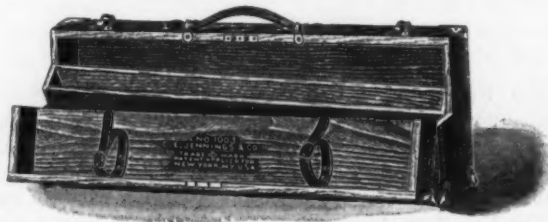


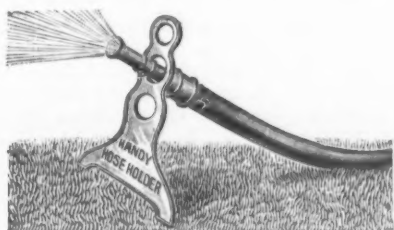
Fig. 4.—Electricians' Hand Tool Case, Open.

metal clasps and corners and removable tray. The outer dimensions are $25\frac{5}{8}$ inches length, $9\frac{1}{8}$ inches height and $5\frac{1}{4}$ inches width. Inside measurements are $24\frac{5}{8}$ inches length, $8\frac{1}{8}$ inches height and $4\frac{1}{4}$ inches width. The inner tray is $23\frac{5}{8}$ inches long, 2 inches deep and 2 inches wide. Electrician's bits 24 inches long and a 24-inch extension can be carried. The box weighs empty $7\frac{1}{4}$ lbs. and is shipped in crates of six each.

Healy & Wyman, East Boston, Mass., Hardware merchants, have incorporated as the Healy & Wyman Hardware Company, with capital stock of \$15,000. The officers are: President, F. A. Healy; treasurer and clerk, William E. Wyman; directors, these officers and A. H. Healy.

The Handy Hose Holder.

The hose holder shown herewith is made of iron, galvanized. By its use it is possible instantly to adjust the



The Handy Hose Holder.

nozzle to various positions. The holder is offered by the Specialty Mfg. Company, St. Anthony Park, Minn.

The Edwards Metal Shingle.

The accompanying cut shows a metal shingle brought out by the Edwards Mfg. Company, 115-121 Sycamore



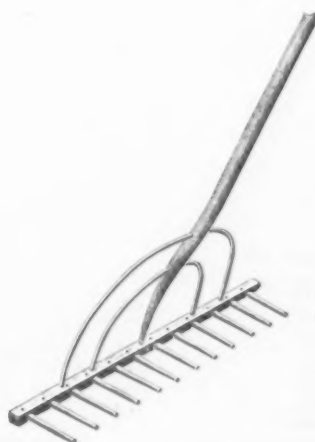
The Edwards Metal Shingle.

street, Cincinnati, Ohio. It is made in tin, galvanized iron and copper, in 7 x 10, 10 x 14, and 14 x 20 inch sizes. The method of interlocking the sheets provides for

contraction and expansion so as to make them water tight. Among the points of excellence claimed for the shingles by the manufacturer are the following: That no mechanic is necessary to lay them; that no solder is necessary; that they will not buckle, break or rattle; that being fireproof they secure a low rate of insurance; that they require lighter framing than slate, and that they can be taken off and relaid on another roof without any loss. It is pointed out that the shingles are particularly adapted to roofs of not less than one-quarter pitch; also for covering mansards, gables, window hoods, bay windows, &c. The shingles are packed 100 square feet in a box for shipping.

Steel Tube Bow Hay and Lawn Rake.

The steel tube bow hay and lawn rake shown in the accompanying illustration has as a distinguishing feature bows made of light, cold rolled steel tubing, one-fourth inch in diameter, bent in the same shape and fastened in the same way as the common wood bows, the weight



Steel Tube Bow Hay and Lawn Rake.

being practically the same. The bows are varnished to prevent rusting and are said to be unbreakable. The rakes are made in three styles: A two-bow rake with 12 teeth; three-bow rake with 14 teeth, and three-bow lawn rake with 24 teeth. The rakes are manufactured by the Rugg Mfg. Company, Greenfield, Mass.

PAINTS, OILS AND COLORS

Animal, Fish and Vegetable Oils—

Animal, Fish and Vegetable Oils—	per gal.
Linseed, City, raw.....	42 @ 43
Linseed, City, Boiled.....	44 @ 45
Linseed, State and West'n, raw.....	41 @ 42
Linseed, raw Calcutta seed.....	65 @ 66
Lard, Extra Prime, Winter.....	65 @ 66
Lard, Extra No. 1.....	48 @ 49
Lard, No. 1.....	38 @ 40
Cotton-seed, Crude, f.o.b. mills.....	24 @ 24 1/2
Cotton-seed, Summer Yellow, Prime.....	31 @ 31 1/2
Cotton-seed, Summer Yellow, off grades.....	@
Sperm, Crude.....	51 @ 52
Sperm, Natural Spring.....	@
Sperm, Bleached Spring.....	@
Sperm, Natural Winter.....	61 @ 63
Sperm, Bleached Winter.....	64 @ 65
Tallow, Prime.....	51 @ 53
Whale, Crude.....	@
Whale, Natural Winter.....	36 @ 40
Whale, Bleached Winter.....	38 @ 41
Menhaden, Brown, Strained.....	26 @ 29
Menhaden, Light, Strained.....	27 @ 30
Menhaden, Bleached, Winter.....	32 @ 33
Menhaden, Ex-Bld., Winter.....	34 @ 35
Menhaden, Southern.....	@
Cocoonut, Ceylon.....	10 @ 11 1/2
Cocoonut, Cochinn.....	7 @ 7 1/2
Cod, Domestic, Prime.....	32 @ 35
Cod, Newfoundland.....	35 @ 38
Red, Elaine.....	33 @ 35
Red, Saponified.....	30 @ 34 1/2
Olive, Italian, bls.....	56 @ 60
Neatsfoot, prime.....	48 @ 49
Palm, Logos.....	10 @ 11 1/2

Mineral Oils—

Black, 29 gravity, 25@30 cold test.....	10 1/2 @ 11 1/2
Black, 29 gravity, 15 cold test.....	11 1/2 @ 12 1/2
Black, Summer.....	10 1/2 @ 11 1/2
Cylinder, light filtered.....	18 @ 19
Cylinder, dark filtered.....	16 @ 17
Paraffine, 903-907 gravity.....	13 1/2 @ 14
Paraffine, 903 gravity.....	12 1/2 @ 13
Paraffine, 883 gravity.....	10 1/2 @ 11 1/2
Paraffine, Red.....	12 1/2 @ 14

In small lots 1/4¢ advance.

Miscellaneous—

Barytes:	
White, Foreign.....	17.50 @ 19.00
Amer. floated.....	17.00 @ 19.00
Off color, No. 2.....	13.50 @ 15.00
Chalk, in bulk.....	3.00 @ 3.25
Chalk, in bbls.....	@ 35
China Clay, English.....	12.00 @ 17.00
Cobalt, Oxide.....	100 lb 2.50 @ 2.60
Whiting, Common.....	100 lb .43 @ .48
Whiting, Gilders.....	100 lb .50 @ .55
Whiting, Ex. Gilders.....	100 lb .55 @ .60

Putty, Commercial—

In bladders.....	\$1.70 @ 1.85
In bbls. or tubs.....	1.20 @ 1.40
In 1 lb to 5 lb cans.....	2.65 @ 2.95
In 1 1/2 to 5 lb cans.....	1.50 @ 1.90

Spirits Turpentine—

In Oil bbls.....	71 1/2 @ 72
In machine bbls.....	72 @ 72 1/2

Glue—

Cabinet.....	11 @ 15
Common Bone.....	7 @ 9
Extra White.....	18 @ 24
Foot Stock, White.....	11 @ 14
Foot Stock, Brown.....	8 @ 11
German Hide.....	12 @ 18
French.....	10 @ 16
Irish.....	13 @ 16
Low Grade.....	9 @ 12
Medium White.....	14 @ 17

Gum Shellac—

Bleached Commercial.....	@ 40
Bone Dried.....	@ 50
Button.....	@ 42
Diamond I.....	@ 45
Fine Orange.....	@ 46
A. C. Garnet.....	@ 43
D. C.....	@ 60
Octagon B.....	@ 45
T. N.....	@ 45
V. S. O.....	@ 45

Colors in Oil—

Black, Lampblack.....	12 @ 14
Blue, Chinese.....	36 @ 46
Blue, Prussian.....	36 @ 46

Blue, Ultramarine.....	13 @ 16
Brown, Vandyke.....	11 @ 14
Green, Chrome.....	12 @ 16
Green, Paris.....	@ 24
Sienna, Raw.....	12 @ 15
Sienna, Burnt.....	12 @ 15
Umber, Raw.....	11 @ 14
Umber, Burnt.....	11 @ 14

White Lead, Zinc, &c.—

Lead, English white, in Oil.....	9 1/2 @ 9 3/4
Lead, American white, in Oil:	
Lots of 500 lb or over.....	@ 7 1/4
Lots less than 500 lb.....	@ 7 3/4
In Barrels.....	@ 6 3/4
Lead, White, in oil, 25 lb tin	
pails, add to keg price.....	@ 1/2
Lead, White, in oil, 12 1/2 lb tin	
pails, add to keg price.....	@ 1
Lead, White, in oil, 1 to 5 lb	
ass'ted tins, add to keg price.....	@ 1 1/4
Lead, American, Terms: For lots 12	
tons and over 1/4¢ rebate; and 2% for	
cash if paid in 15 days from date of	
invoice; for lots of 500 lbs. and over	
2% for cash if paid in 15 days from	
date of invoice, for lots of less than	
500 lbs. net.....	@ 1/2
Lead, White, Dry, in bbls.....	@ 6 1/2
Zinc, American, dry.....	4 1/2 @ 5
Zinc, French:	
Paris, Red Seal, dry.....	9 1/2
Paris, Green Seal, dry.....	10 1/2
Antwerp, Red Seal, dry.....	8 1/2
Antwerp, Green Seal, dry.....	10
Zinc, V. M. French, in Poppy Oil:	
Green Seal:	
Lots of 1 ton and over.....	12 1/2 @ 13 1/2
Lots of less than 1 ton.....	13 1/2 @ 14 1/2
Zinc, V. M. French, in Poppy Oil:	
Red Seal:	
Lots of 1 ton and over.....	11 1/2 @ 12 1/2
Lots of less than 1 ton.....	12 1/2 @ 13 1/2
Discounts—French Zinc—Discounts	
to buyers of 10 bbl. lots of one or mixed	
grades. 1 1/2% 25 bbls., 2%; 50 bbls., 4%.	

Dry Colors—

Black, Carbon.....	5 @ 10
Black, Drop, American.....	4 @ 6
Black, Drop, English.....	5 @ 15
Black, Ivory.....	16 @ 20

Lamp, Com.....	4 1/2 @ 6
Blue, Celestial.....	4 @ 6
Blue, Chinese.....	29 @ 32
Blue, Prussian.....	27 @ 30
Blue, Ultramarine.....	4 1/2 @ 15
Brown, Spanish.....	3 1/2 @ 1
Carmine, No. 40.....	\$3.30 @ 3.40
Green, Chrome, ordinary.....	3 1/2 @ 6
Green, Chrome, pure.....	17 @ 25
Lead, Red, bbls., 1/2 bbls. and kegs:	
Lots 500 lb or over.....	@ 7 1/4
Lots less than 500 lb.....	@ 7 3/4
Litharge, American, bbls.....	@ 7 1/4
Ocher, American.....	10 @ 16.00
Ocher, American Golden.....	2 1/2 @ 3 1/2
Ocher, French.....	1 1/2 @ 2 1/2
Ocher, Foreign Golden.....	3 @ 4
Orange Mineral, English.....	10 @ 12
Orange Mineral, French.....	10 1/2 @ 12 1/2
Orange, Mineral, German.....	8 1/2 @ 10
Orange, Mineral, American.....	8 1/2 @ 10
Red, Indian, English.....	4 1/2 @ 8 1/2
Red, Indian, American.....	3 @ 3 1/2
Red, Turkey, English.....	4 @ 10
Red, Tuscan, English.....	7 @ 10
Red, Venetian, Amer.....	100 lb \$0.50 @ 1.25
Red Venetian, English.....	100 lb \$1.15 @ 1.75
Sienna, Italian, Burnt and	
Powdered.....	3 @ 9 1/2
Sienna, Ital., Raw, Powd.....	3 @ 6 1/2
Sienna, American, Raw.....	1 1/2 @ 2
Sienna, American, Burnt and	
Powdered.....	1 1/2 @ 2
Talc, French.....	10 @ 15.00 @ 30.00
Talc, American.....	10 @ 15.00 @ 25.00
Terra Alba, French.....	100 lb 90 @ 1.00
Terra Alba, English.....	100 lb 90 @ 1.00
Terra Alba, American.....	100 @ 1.00
No. 1.....	70 @ 80
Terra Alba, American.....	100 @ 1.00
No. 2.....	60 @ 65
Umber, Turkey, Bnt. & Pow.....	2 1/2 @ 3 1/2
Umber, Burnt, Amer.....	1 1/2 @ 2
Umber, Raw, Amer.....	1 1/2 @ 2
Yellow Chrome.....	12 @ 15
Vermilion, American Lead.....	10 @ 25
Vermilion, Quicksilver, bulk.....	@ 65
Vermilion, Quicksilver, bags.....	@ 62
Vermilion, English, Import.....	75 @ 80
Vermilion, Chinese.....	90 @ 90 @ 1.00

Current Hardware Prices.

General Goods.—In the following quotations General Goods—that is, those which are made by more than one manufacturer—are printed in *Italics*, and the prices named, unless otherwise stated, represent those current in the market as obtainable by the fair retail Hardware trade, whether from manufacturers or jobbers. Very small orders and broken packages often command higher prices, while lower prices are frequently given to larger buyers.

Special Goods.—Quotations printed in the ordinary type (Roman) relate to goods of particular manufacturers, who are responsible for their correctness. They usually represent the prices to the small trade, lower prices being obtainable by the fair retail trade, from manufacturers or jobbers.

Range of Prices.—A range of prices is indicated by means of the symbol @. Thus 33 $\frac{1}{2}$ @ 33 $\frac{1}{2}$ & 10% signifies

that the price of the goods in question ranges from 33 $\frac{1}{2}$ per cent. discount to 33 $\frac{1}{2}$ and 10 per cent. discount.

Names of Manufacturers.—For the names and addresses of manufacturers see the advertising columns and also THE IRON AGE DIRECTORY, issued May, 1905, which gives a classified list of the products of our advertisers and thus serves as a DIRECTORY of the Iron, Hardware and Machinery trades.

Standard Lists.—A new edition of "Standard Hardware Lists" has been issued and contains the list prices of many leading goods.

Additions and Corrections.—The trade are requested to suggest any improvements with a view to rendering these quotations as correct and as useful as possible to Retail Hardware Merchants.

Adjusters, Blind—

Domestic, $\frac{1}{2}$ doz. \$3.00.....33 $\frac{1}{2}$ %
North's.....10%
Zimmerman's—See Fasteners, Blind.

Window Stop—

Ives' Patent.....35%
Taplin's Perfection.....35%

Ammunition—See Caps, Cartridges, Shells, &c.

Anvils—American—

Eagle Anvils..... $\frac{1}{2}$ lb. 6 $\frac{1}{2}$ @7 $\frac{1}{2}$
Hay-Budden, Wrought.....9@9 $\frac{1}{2}$
Horseshoe brand, Wrought.....9@9 $\frac{1}{2}$
Trenton..... $\frac{1}{2}$ lb. 9@9 $\frac{1}{2}$

Imported—

Peter Wright & Sons..... $\frac{1}{2}$ lb. 10 $\frac{1}{2}$ @

Anvil, Vise and Drill—

Millers Falls Co., \$12.00.....15@10%

Apple Parers—See Parers, Apple, &c.

Aprons, Blacksmiths'—

Livingston Nail Co.....33 $\frac{1}{2}$ %

Augers and Bits—

Com. Double Spur.....75@75@55%

Jennings' Patn., reg. finish.....50@19@60%

Black Lip or Blued.....60@10%

Boring Mach. Augers.....70@10%

Car Bits, 12-in. twist.....50@10%

Ford's Auger and Car Bits.....40@5%

Forster Pat. Auger Bits.....25%

C. E. Jennings & Co.....25%

No. 10 ext. lip, R. Jennings' list.....25%

No. 30, R. Jennings' list.....40@7 $\frac{1}{2}$ %

Russell Jennings.....25@10@2 $\frac{1}{2}$ %

L'Hommedieu Car Bits.....15%

Mayhew's Countersink Bits.....50@5%

Millers Falls.....50@5%

Ohio Tool Co.'s Bailey Auger and Car Bits.....40@10%

Pugh's Black.....20%

Pugh's Jennings' Pattern.....35%

Snell's Auger Bits.....60%

Snell's Bell Hangers.....60%

Snell's Car Bits, 12-in. twist.....60@10%

Wright's Jennings' Bits.....50%

Bit Stock Drills—

See Drills, Twist.

Expansive Bits—

Clark's small, \$18; large, \$25.....50@10%

Clark's Pattern, No. 1, $\frac{1}{2}$ doz. \$35; No. 2, \$18.....60%

Ford's, Clark's Pattern.....50@5%

C. E. Jennings & Co., Stearns' Pat. 25% Swan's.....60%

Gimlet Bits—

Common Dble. Out.....\$3.00@3.25

German Pattern, Nos. 1 to 10, \$4.60; 11 to 13, \$6.75

Hollow Augers—

Bonney Pat., per doz. \$5.50@6.00

Ames.....25@10%

Universal.....20%

Wood's Universal.....25%

Ship Augers and Bits—

Ship Augers.....45@50@60%

Ford's.....33@35%

C. E. Jennings & Co.....35@35%

L'Hommedieu's.....15%

Watrous.....35@35%

Ohio Tool Co.'s.....40%

Snell's.....40%

Awl Hafts—See Handies, Mechanics' Tool.

Awls—

Brad Awls:

Handled.....gro. \$2.75@3.00

Unhdded, Shldered.....gro. \$3.60@4.00

Unhdded, Patent.....gro. \$6@7@4

Peg Awls:

Unhdded, Patent.....gro. \$1@1 $\frac{1}{2}$ @1 $\frac{1}{2}$

Unhdded, Shldered.....gro. \$5@7@4

Scratch Awls:

Handled, Com.....gro. \$3.50@4.00

Handled, Socket.....gro. \$11.50@12.00

Hurwood.....40%

Awl and Tool Sets—See Sets, Awl and Tool.

Axes—

Single Bit, base weights:

First Quality.....\$4.75@5.00

Second Quality.....\$4.25@4.50

Double Bit, base weights:

First Quality.....\$7.00@7.50

Second Quality.....\$6.50@6.75

Axle Grease—

See Grease, Axle

Axles—

Concord, Loose Collar.....4 $\frac{1}{2}$ @4 $\frac{1}{2}$

Concord, Solid Collar.....4 $\frac{1}{2}$ @4 $\frac{1}{2}$

No. 1 Common, Loose.....3 $\frac{1}{2}$ @3 $\frac{1}{2}$

No. 1 $\frac{1}{2}$ Com., New Style 3 $\frac{1}{2}$ @4 $\frac{1}{2}$

No. 2 Solid Collar.....4@4 $\frac{1}{2}$

Half Patent.....4@4 $\frac{1}{2}$

Nos. 7, 8, 11 and 12.....75@75@55%

Nos. 13 to 14.....70@10@75@55%

Nos. 15 to 18.....75@10@75@10@55%

Nos. 19 to 22.....75@10@75@10@55%

Boxes, Axle—

Common and Concord, not turned lb. 4 $\frac{1}{2}$ @5 $\frac{1}{2}$

Common and Concord, turned lb. 8 $\frac{1}{2}$ @9 $\frac{1}{2}$

Half Patent.....lb. 8 $\frac{1}{2}$ @9 $\frac{1}{2}$

Bait— Fishing—

Hendryx:

A Bait.....20%

B Bait.....25%

Competitor Bait.....20@45%

Balances— Sash—

Caldwell new list.....50%

Pulman.....50@10@60%

Spring—

Spring Balances.....50@10@60%

Chatillon's:

Light Spg. Balances.....40@10%

Straight Balances.....40%

Circular Balances.....50%

Large Dial.....30%

Barb Wire—See Wire, Barb.

Bars— Crow—

Steel Crowbars, 10 to 40 lb. per lb. 3@3 $\frac{1}{2}$

Towel—

No. 10 Ideal, Nickel Plate..... $\frac{1}{2}$ gro. \$8.50

Beams, Scale—

Scale Beams.....40@10@50%

Chatillon's No. 1.....30%

Chatillon's No. 2.....40%

Beaters, Carpet—

Holt-Lyon Co.:

No. 12 Wire Coppered $\frac{1}{2}$ doz. \$0.25; Tinned.....\$1.00

No. 11 Wire Coppered $\frac{1}{2}$ doz. \$1.10; Tinned.....\$1.20

No. 10 Wire Galvanized..... $\frac{1}{2}$ doz. \$1.75

Western W. G. Co.:

No. 1 Electric..... $\frac{1}{2}$ gro. \$7.80

No. 2 Buffalo..... $\frac{1}{2}$ gro. \$9.00

No. 3 Perfection Dust..... $\frac{1}{2}$ gro. \$8.00

Egg—

Holt-Lyon Co.:

Holt, No. A, Japanned..... $\frac{1}{2}$ doz. \$1.20

Holt, No. B, Tinned..... $\frac{1}{2}$ doz. \$1.20

Holt, No. C, Japanned..... $\frac{1}{2}$ doz. \$2.00

Holt, No. D, Tinned..... $\frac{1}{2}$ doz. \$2.25

Lyon, No. 2, Japanned..... $\frac{1}{2}$ doz. \$1.25

Lyon, No. 3, Japanned..... $\frac{1}{2}$ doz. \$1.50

Taplin Mfg. Co.:

No. 80 Improved Dover.....\$6.50

No. 75 Improved Dover.....\$6.50

No. 100 Improved Dover.....\$7.00

No. 102 Improved Dover, Tin'd.....\$8.50

No. 150 Improved Dover, Hotel.....\$15.00

No. 152 Imp'd Dover, Hotel, T'd.....\$15.00

No. 200 Imp'd Dover Tumbler.....\$8.50

No. 202 Imp'd Dover Tumbler, T'd.....\$9.50

No. 300 Imp'd Dover Mammoth.....\$25.00

Western W. G. Co., Buffalo.....\$7.00

Wonder (R. M. Co.)..... $\frac{1}{2}$ gro. net, \$6.00

Bellows—

Blacksmith, Standard List.....60@10@70@10%

Hand—

Inch.....6 7 8 9 10

Doz.....\$4.75 5.70 6.65 7.60 8.55

Molders—

Inch.....9 10 11 12 14

Doz.....\$8.00 9.00 10.50 12.50 14.50

Bells— Cow—

Ordinary goods.....75@55@75@10@55%

High grade.....70@10@70@10@55%

Jersey.....75@10%

Texas Star.....50%

Door—

Abbe's Gong.....45%

Burton Gong.....50%

Home, R. & E. Mfg. Co.'s.....55@10%

Lever and Pull, Sargent's.....60@10@10%

Trip Gong.....50@10@50@10@55%

Yankee Gong.....55%

Hand—

Hand Bells, Polished Brass.....60@10%

White Metal.....60%

Nickel Plated.....50@10@60%

Swiss.....60@60@7 $\frac{1}{2}$ %

Cone's Globe Hand Bells.....33@35%

Silver Chime.....33@35%

Miscellaneous—

Farm Bells.....lb. 2 $\frac{1}{2}$ @

Steel Alloy Church and School.....50@10@60%

Gongs.....75%

American Tube & Stamping Co.....75%

Table Call Bells.....50@50@10%

Belting— Leather—

Extra Heavy, Short Lap.....60@55%

Regular Short Lap.....60@10@55%

Standard.....70%

Light Standard.....70@55%

Cut Leather Lacing.....50%

Leather Lacing Sides, per sq. ft. 25¢

Rubber—

Agricultural (Low Grade).....75@75@55%

Common Standard.....70@70@10%

Standard.....60@55@60@10%

Extra.....60@60@55%

High Grade.....50@55@50@10%

Bench Stops—

See Stops, Bench

Benders and Upsetters, Tire—

Detroit Perfected Tire Bender.....40%

Detroit Standard's Lightning Tire Upsetters, No. 1, \$4.25; No. 2, \$7.25; No. 3, \$10.50; No. 4, \$16.25; No. 5, \$20.50.

Green River Tire Benders and Upsetters.....20%

Bicycle Goods—

John S. Leng's Son's 1902 list:

Chains.....50%

Parts.....50%

Spokes.....50%

Tubes.....60%

Bits—

Auger, Gimlet, Bit Stock Drills, &c.—See Augers and Bits.

Blocks— Tackle—

Common Wooden.....70@10@75%

Hartz St. Tackle Blocks.....50@50@55%

B. & L. R. Co.:

Boston Wood Snatch, 50%; Eclipse Steel, 75%; Hollow Steel, 50@10%

Star Wire Rope, 50%; Tarbox Metal Snatch, 50%; Tarbox New Style Steel, 50@10%; Wire Rope Snatch, 50%.

Lane's Patent Automatic Lock and Junior.....30%

Stowell's Novelty, Mal. Iron.....50@10%

Stowell's Self Loading.....60%

See also Machines, Hoisting.

Boards, Stove—

Zinc, Crystal, &c.....30@19@40@10%

Boards, Wash—

See Washboards.

Bobs, Plumb—

Keuffel & Esser Co.....\$3.45

Bolts—

Carriage, Machine, &c.—

Common Carriage (cut thread); $\frac{1}{2}$ & 6 and smaller.....75@—

Larger and Longer.....65@50%

Phila. Eagle, \$3.00 Hot May \$1.90

Bolt Ends, list Feb. 14, '95.....80%

Machine, $\frac{1}{2}$ & 4 and smaller.....65@10@75@—

Machine, larger and longer.....65@50@—

Door and Shutter—

Cast Iron Barrel, Japanned, Round Brass Knob:

Inch.....3 4 5 6 8

Per doz. \$0.30 .35 .45 .60 .80

Cast Iron Spring Foot, Jap'd:

Inch.....6 8 10

Per doz.....\$1.20 1.50 2.25

Cast Iron Chain, Flat Japanned:

Inch.....6 8 10

Per doz.....\$1.00 1.40 1.85

Cast Iron Flat Shutter, Jap'd, Brass Knobs:

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Gautier, Blunt.....40¢4¢
Gautier, Sharp.....40¢4¢
Perkins, Blunt Toe.....40¢4¢
Perkins, Sharp Toe.....40¢4¢

Can Openers—

See Openers, Can.

Cans, Milk—

Illinois Pattern.....1.35 1.85 2.05 each.
New York Pattern.....1.50 2.20 2.45 each.
Baltimore Pattern.....1.50 2.20 2.45 each.
Delaware Pattern.....1.35 1.60 1.75 each.

Cans, Oil—

Buffalo Family Oil Cans:
3 10 gal. 125.60 gro. net.
5 18.00 60.00

Caps, Percussion—

Eley's E. B.....52¢55¢
G. D.....per M 34¢55¢
F. L.....per M 40¢42¢
G. E.....per M 48¢50¢
Musket.....per M 62¢63¢

Primers—

Berdan Primers, 2¢ per M.....80¢
B. L. Caps (Sturtevant Shells).....80¢
2¢ per M.....80¢
All other primers per M.....\$1.52@1.60

Cartridges—

Blank Cartridges:
32 C. F., \$5.50.....10¢5¢
32 C. F., \$7.00.....10¢5¢
32 cal. Rim, \$1.50.....10¢5¢
32 cal. Rim, \$2.75.....10¢5¢
B. B. Caps, Con. Ball, Suedg. \$1.90
B. B. Caps, Round Ball.....\$1.49
Central Fire.....25¢
Target and Sporting Rifle.....15¢5¢
Primed Shells and Bullets.....15¢10¢
Rim Fire, Sporting.....50¢
Rim Fire, Military.....15¢5¢

Casters—

Bed.....70¢70¢10¢
Plate.....60¢10¢60¢10¢5¢
Philadelphia.....75¢75¢10¢
Acme Ball Bearing.....35¢4¢
Boss.....70¢10¢
Boss Anti-Friction.....70¢10¢
Gem (Roller Bearing).....50¢
Martin's Patent (Phoenix).....45¢
Standard Ball Bearing.....45¢
Tucker's Patent low list.....30¢
Yale (Double Wheel) low list.....30¢

Cattle Leaders—

See Leaders, Cattle.

Chain, Coil—

American Coil, Straight Link:
3-16 1/4 5-16 3/4 7-16 1/2 9-16 1/2
\$3.70 5.90 4.95 4.20 4.05 3.95 3.90
3/8 1/2 1 1 1/2 to 1 3/4 inch.
\$3.85 3.70 3.65 3.80

Halter—

Halter Chains.....60¢45¢60¢10¢
German Pattern Halter Chains,
list July 21, '97.....60¢10¢10¢
Covert Mfg. Co.....35¢45¢
Halter.....70¢
Covert's Saddlery Works.....70¢
Halter.....70¢

Cow Ties—

See Halters and Ties.

Trace, Wagon, &c.—

Traces, Western Standard: 100 pr.
6 1/4-6-3, Straight, with ring.....\$25.00
6 1/4-6-2, Straight, with ring.....\$25.00
6 1/4-8-2, Straight, with ring.....\$30.00
6 1/4-10-2, Straight, with ring.....\$35.00
NOTE—Add 2¢ per pair for Hooks.
Twist Traces 2¢ per pair higher than
Straight Link.

Eastern Standard Traces, Wag-

on Chain, &c.....60¢10¢

Miscellaneous

Jack Chain, list July 10, '93:
Iron.....60¢10¢5¢70¢
Braas.....60¢10¢60¢10¢10¢
Safety Chain.....75¢75¢10¢
Gal. Pump Chain.....lb. 4¢4 1/2¢

Covert Mfg. Co.—

Braas, Halter, Heel, Rein, Stal-

lion

Covert Sad. Works:
Braas, Hold Back, Rein.....70¢
Oneida Community:
Am. Dog Leads and Kennel Chains,
40¢40¢45¢

Niagara Dog Leads and Kennel

Chains.....45¢60¢45¢

Wire Goods Co.—

Dog Chain.....70¢10¢
Universal Dbl.-Jointed Chain.....50¢

Chain and Ribbon, Sash—

Oneida Community:
Copper Chain.....60¢45¢
Steel Chain.....60¢

Pullman:

Bronze Chain.....60¢
Steel Chain.....60¢10¢
Sash Chain Attachments, per set. 8¢
Aluminum Sash Ribbon, per 100
ft.....\$1.25@3.00
Sash Ribbon Attachments, per set. 8¢

Chalk—

(From Jobbers.)
Carpenters' Blue.....gro. 38¢40¢
Carpenters' Red.....gro. 35¢35¢
Carpenters' White.....gro. 28¢30¢
See also Crayons.

Checks, Door—

Bardsley's.....45¢
Eclipse.....60¢10¢
Pullman, per gro.....\$4.00
Russwin.....40¢

Chests, Tool—

American Tool Chest Co.:
Boy's Chests, with Tools.....55¢
Youths' Chests, with Tools.....40¢
Gentlemen's Chests, with Tools.....30¢
Farmers' Carpenters' etc., Chests,
with Tools.....20¢
Machinists' and Pipe Fitters'
Chests, Empty.....50¢
Tool Cabinets.....50¢
C. E. Jennings & Co.'s Machinists'
Tool Chests.....35¢10¢

Chisels—

Socket Framing and Framer
Standard List.....75¢75¢10¢

Buck Bros.....30¢
Charles Buck.....30¢
C. E. Jennings & Co. Socket Framer
No. 10.....60¢
C. E. Jennings & Co. Socket Framer
ing No. 15.....50¢
Ohio Tool Co.'s.....70¢
Swan's.....75¢
L. & I. J. White.....30¢30¢45¢
L. & I. J. White, Tanged.....25¢45¢

Tanged—

Tanged Firmers.....33 1-3¢40¢
Buck Bros.....30¢
Charles Buck.....30¢
C. E. Jennings & Co. Nos. 191, 181.....25¢

Cold—

Cold Chisels, good quality.....15¢15¢
Cold Chisels, fair quality.....11¢12¢
Cold Chisels, ordinary.....9¢10¢

Chucks—

Almond Drill Chucks.....35¢
Almond Turret Six-Tool Chuck.....35¢
Beach Pat., each \$8.00.....35¢45¢
Empire.....25¢
Blacksmiths.....25¢
Jacobs' Drill Chucks.....25¢
Pratt's Positive Drive.....25¢
Skinner Patent Chucks:
Independent Lathe Chucks.....40¢10¢
Universal, Reversible Jaws.....40¢
Combination, Reversible Jaws.....40¢
Drill Chucks, New Model.....25¢
Drill Chucks, Standard.....40¢10¢
Drill Chuck, Skinner Pat.....25¢
Drill Chucks, Positive Drive.....35¢
Planer Chucks.....30¢
Face Plate Jaws.....40¢10¢
Standard Tool Co.:
Improved Drill Chuck.....45¢
Union Mfg. Co.:
Combination.....50¢
Czar Drill.....35¢
Combination Geared Scroll.....40¢
Geared Scroll.....40¢
Independent.....40¢
Independent Steel.....45¢
Union Drill.....45¢
Universal.....45¢
Independent Iron F. Plate Jaws.....40¢
Independent Steel F. Plate Jaws.....40¢
Westcott Patent Chucks:
Lathe Chucks.....50¢
Little Giant Auxiliary Drill.....50¢
Little Giant Double Grip Drill.....50¢
Little Giant Drill, Improved.....50¢
Oneida Drill.....50¢
Scroll Combination Lathe.....50¢

Clamps—

Adjustable, Hammers.....20¢20¢45¢
Cabinet, Sargent's.....50¢10¢
Carriage Makers', P. S. & W.
Co.....40¢10¢50¢
Carriage Makers', Sargent's.....40¢
Bealy, Parallel.....35¢45¢
Lineman's, Utica Drop Forge & Tool
Co.....40¢
Wood Workers, Hammers.....40¢10¢
Saw Clamps, see Vises, Saw Filers'.
Cleaners, Drain—
Iwan's Champion, Adjustable.....55¢
Iwan's Champion, Stationary.....47¢
Sidewalk—
Star Socket, All Steel.....\$4.05 net
Star Shank, All Steel.....\$3.24 net
W. & C. Sink, All Steel.....\$4.05 net
7 1/2 in., \$3.00; 8 in., \$3.25.
Cleavers, Butchers'—
Foster Bros.....30¢
New Haven Edge Tool Co.'s.....45¢
Fayette R. Plumb.....30¢
L. & I. J. White.....30¢

Clippers, Horse and

Sheep—
Chicago Flexible Shaft Company:
98 Chicago Horse, each.....\$8.75
1902 Chicago Horse, each.....\$10.75
20th Century Horse, each.....\$5.00
Lightning Belt Horse, each.....\$15.00
Chicago Belt Horse, each.....\$20.00
Stewart's Enclosed Gear
Horse, each.....\$4.75
Stewart's Patent Snap Shear
ing Machine, each.....\$12.75

Clips, Axle

Regular Styles, list July 1, '05.80%

Cloth and Netting, Wire

—See Wire, &c.

Cocks, Brass—

Hardware list:
Compression, Plain Bidsb,
Globe, Kerosene, Racking,
&c., Cocks.....75¢75¢45¢

Coffee Mills—

See Mills, Coffee.

Collars, Dog—

Nickel Chain, Walter B. Stevens &
Son's list.....40¢
Leather, Walter B. Stevens & Son's
list.....40¢

Combs, Curry—

Metal Stamping Co.....40¢

Mane and Tail—

Covert's Saddlery Works.....60¢10¢
Ordinary Goods.....75¢45¢75¢10¢
Bemis & Call Hdw. & Tool Co.:
Dividers.....65¢
Calipers, Double.....65¢
Calipers, Inside or Outside.....60¢
Calipers, Wing.....60¢
Compasses.....50¢
Wm. Schollhorn Co.:
Excelsior Dividers.....60¢
Lodi Dividers.....75¢

Conductor Pipe—

L. C. L. to Dealers:
Territory: Galvanized
Galv. Charcoal
Steel. Iron. Copper.

Eastern:
70¢10 % 60¢7 1/2 % 50 %
Central:
70¢2 1/2 % 60 % 40¢10¢5 %
Western and S. W.:
65¢10 % 50¢10¢2 1/2 % 47 1/2 %
So. Western:
62 1/2¢7 1/2 % 50¢5 % 40¢10 %
Copper. 14¢16 oz.
Eastern.....50¢10 %
Central.....50¢7 1/2 %

Southern.....50¢5 %
So. Western.....50¢2 1/2 %
Terms, 60 days; 2% cash 10 days. Fac-
tory shipments generally delivered.
See also Eave Troughs.

Coolers, Water—

Gal. each. 2 3 4 6 8
Labrador.....\$1.20 \$1.50 \$1.80 \$2.10 \$2.70
Gal.....3 4 6 8
Iceland, ea. \$1.80 \$2.10 \$2.40 \$3.00
Gal.....2 3 4 6 8
Galvanized, ea. \$1.85 \$2.00 \$2.25 \$2.50 \$3.00
Galvanized, Lined, side handles,
Gal.....2 3 4 6 8
Each.....\$1.95 \$2.15 \$2.40 \$3.30 \$4.15
White Enameled.....25¢
Agate Lined.....25¢

Coopers' Tools—

See Tools, Coopers'.

Coppers' Soldering—

Soldering Coppers, 3 lbs. to pair
and heavier, 23¢24¢; lighter
than 3 lbs. to pair.....25¢26¢

Cord— Sash—

Braided, Drab.....lb. 35¢
Braided, White, Com., Nos. 8
to 12, 24¢; No. 7, 24¢; No. 6,
25¢4¢.

Cable Laid Italian—

lb., A, 18¢; B, 16¢

Common India.....lb. 10¢10 1/2¢

Cotton Sash Cord, Twisted.....lb. 17¢19¢

Patent Russia.....lb. 14¢14 1/2¢

Cable Laid Russia.....lb. 15¢15 1/2¢

India Hemp, Braided.....lb. 15¢15 1/2¢

India Hemp, Twisted.....lb. 12¢13¢

Patent India, Twisted.....lb. 12¢13¢

Anson Cordage Co.: 3 lb. solid
Braided, Nos. 8 to 12, \$0.24; No. 7,
\$0.24; No. 6, \$0.25; 1/2 doz., 50 ft.,
Oriole, \$2.00; 50 ft., Columbia, \$0.85;
50 ft., Victors, \$1.00; 50 ft., 6-Thread,
\$1.10; 60 ft., 3-Thread, \$0.95; 50 ft.,
Manila, \$1.40; 60 ft., Jute, \$0.75.

Pearl Braided, cotton, No. 6, 3 lb. lb.
25¢4¢; No. 7, 25¢4¢; Nos. 8 to 12, 24¢4¢

Eddystone Braided, Nos. 8, 9 and
10, 25¢4¢; 7, 25¢4¢; 6, 26¢4¢.

Harmony Cable Laid Italian, Nos. 7
to 10.....lb. 23¢

Peerless.....lb. 16¢

Cable Laid Italian.....lb. 16¢

Cable Laid Russian.....lb. 14¢

Cable Laid India.....lb. 12¢

Braided India.....lb. 18¢

Pullman:
Wire Sash Cord.....18%

Sash Cord Attachments, per doz. 10¢

Samsom, Nos. 8 to 12.....lb. 40¢

Braided, Drab Cotton.....lb. 40¢

Braided, Italian Hemp.....lb. 40¢

Braided, Linen.....lb. 55¢

Braided, White Cotton or Spot.....lb. 35¢

Massachusetts, White.....lb. 35¢

Massachusetts, Drab.....lb. 35¢

Phoenix, White, Nos. 8 to 12, 27¢4¢;
No. 7, 27 1/2¢4¢; No. 6, 28 1/2¢4¢.

Silver Lake:
A, Drab.....45¢

A, White.....45¢

B, Drab.....45¢

B, White.....45¢

Italian Hemp.....40¢

Linen.....57¢4¢

See also Chain and Ribbon.

Wire, Picture—

85¢10¢10¢85¢10¢10¢5 %

Handry Standard Wire Picture Cord,
85¢10%

Cradles—

Grain.....40¢12 1/2 %

Crayons—

White Round Crayons, gr. 6@6 1/4¢

Cases, 100 gro., \$5.00 at factory.

D. M. Stewart Mfg. Co.:
Genuine.....Per gro.

Round Pencil, \$2.25; Square Pen-
cil, \$1.75; Flat Crayon, \$2.50;
Metal Workers' Crayon, \$3.00;
Rolling Mill Crayon, \$3.00.

Compo. Per gro.
Round Pencil, \$1.50; Square Pen-
cil, \$1.50; Flat Crayon, \$1.50;
Metal Workers' Crayon, \$2.50;
Rolling Mill Crayon, \$2.50;
Railroad Crayon, \$4.00; Compo.
Crayon, \$4.00.

Zelnicker's Lumber:
Red, Blue, Green.....\$0.30 \$0.50
Black.....\$0.30 \$0.50
See also Chalk.

Crooks, Shepherds'—

Fort Madison, Heavy.....\$0.30 \$0.50
Fort Madison, Light.....\$0.30 \$0.50

Crow Bars—

See Bars, Crow.

Cultivators—

Victor Garden.....50%

Cutlery, Table—

International Silver Company:
No. 12 M'd'm Knives, 1917.....\$0.30 \$0.50
Star, Eagle, Rogers & Hamilton
and Anchor.....\$0.30 \$0.50
Wm. Rogers & Son.....\$0.30 \$0.50

Cutters—

H. H. Mayhew Co.....40%

Red Devil.....50%

Smith & Hemenway Co.....50%

Woodward.....40%

Meat and Food—

American.....30%

Nos. 1 2 3 4 B 5
Each.....\$5 \$7 \$10 \$25 \$50 \$60

Enterprise.....25¢25¢7 1/2 %

Nos. 1 2 3 4 B 5
Each.....\$2 \$3 \$2.75 \$4.50 \$6

Dixon's.....1 doz. 40¢50%

Nos. 1 2 3 4 B 5
\$14.00 \$17.00 \$19.00 \$30.00

Ideal.....40¢10¢50%

Little Giant.....\$0.30 \$0.50

Nos. 305 310 312 320 322
\$35.00 \$48.00 \$44.00 \$72.00 \$68.00

N. E. Food Choppers.....25%

New Triumph No. 605, \$0.30 \$0.50
40¢50%

Russwin Food, No. 1, \$24.00; No. 2,
\$27.00.....45¢10¢10%

Woodruff's.....\$0.40 \$0.50

Nos. 100 150
\$15.00 \$18.00

Enterprise Beef Shavers.....25¢30%

Slaw and Kraut—

Henry Dison & Sons:
Slaw, Corn Grater, &c.....40%

Kraut Cutters, 21 x 7, 26 x 8, 30
x 9.....55%

Kraut Cutters, 36 x 12, 40 x 12.....40%

J. M. Mast Mfg. Co.:
Slaw Cutters, 1 Knife.....\$0.30 \$0.50
Combined Slaw Cutter and Corn
Grater.....\$0.30 \$0.50

Tucker & Dorsey Mfg. Co.:
Kraut Cutters.....40%

Slaw Cutters, 1 Knife.....\$0.30 \$0.50

Slaw Cutters, 2 Knife.....\$0.30 \$0.50

Tobacco

All Iron, Cheap.....doz. \$4.25@4.50

Enterprise.....25¢30%

National, \$0.30 \$0.50; No. 1, \$0.30; No. 2,
\$0.30.....40%

Sargent's.....\$0.30 \$0.50

Sargent's, Nos. 12 and 21.....60¢10%

Washer

Appleton's, \$0.30 \$0.50.....50¢10¢10%

Diggers, Post Hole, &c.—

Dalbey Post Hole Auger, per doz. \$9.00

Iwan's Improved Post Hole Auger.....40¢5%

Iwan's Vaughan Pattern Post Hole
Auger.....\$0.30 \$0.50

Iwan's Perfection Post Hole Digger.....\$0.30 \$0

1/4 Keys.....lb. 5 1/2¢ 6¢ 4¢
 10-lb. cans..... 6 1/2¢ 7¢ 6¢
 10-lb. cans, less
 than 10.....10¢ 10¢ 8¢
 Less quantity.....10¢ 10¢ 8¢
 NOTE.—In lots 1 to 3 tons a discount
 of 10% is given.

Extractors, Lemon Juice

—See Squeezers, Lemon.

Fasteners, Blind—

Zimmerman's.....50¢10%
 walling's.....40¢10%

Cord and Weight—

Ives.....40%

Faucets—

Cork Lined.....50¢10¢10%
 Metallic Key, Leather Lined.....

Red Cedar.....60¢10¢70%
 Petroleum.....60¢10¢75%
 H. & L. B. Co.:

Metal Key.....60¢10%
 Star.....60%
 West Lock.....50¢10%

John Sommer's Peerless Tin Key.....40%
 John Sommer's Boss Tin Key.....50%
 John Sommer's Victor Mtl. Key.....50%
 John Sommer's Duplex Metal Key.....60%
 John Sommer's Diamond Lock.....40%
 John Sommer's I. X. L. Cork Lined.....50%
 John Sommer's Reliable Cork Lined.....

John Sommer's Chicago Cork Lined.....60%
 John Sommer's O. K. Cork Lined.....50%
 John Sommer's No Brand, Cedar.....50%
 John Sommer's Perfection, Cedar.....40%

McKenna, Brass:

Burglar Proof, N. P.....25%
 Improved, 1/2 and 1 inch.....25%
 Self Measuring.....40%
 Enterprise, 1/2 doz. \$36.00.....40%
 Lane's, 1/2 doz. \$36.00.....40%
 National Measuring, 1/2 doz. \$36.00.....40%

Felloe Plates—

See Plates, Felloe.

Files—Domestic—

List revised Nov. 1, 1899.

Best Brands.....70¢10¢75¢10%
 Standard Brands.....75¢10¢75¢10%
 Lower Grade.....75¢10¢10¢80¢10%

Imported

Stubs' Tapers, Stubs' Ltd, July
 24, '97.....33¢1-3¢40%

Fixtures, Fire Door—

Richards Mfg. Co.:

Universal, No. 105.....\$3.75
 Special, No. 107.....\$3.75
 Fusible Links, No. 96.....50%
 Expansion Bolts, No. 107.....60%10%

Grindstone—

Net Prices:

Inch.....15 17 19 \$1
 Per doz.....\$3.25 3.75 4.25 4.75
 P. S. & W. Co.....30¢10¢40%
 Reading Hardware Co.....60%
 S. A. J. Co.....70%
 Stowell's Giant Grindstone.....\$2.00

Stowell's Grindstone Fixtures, Extra
 Heavy.....50¢10¢10%
 Stowell's Grindstone Fixtures, Light.....60%10%

Fodder Squeezers—

See Compressors.

Forks—

NOTE.—Manufacturers are
 selling from the list of September
 1, 1904, but many jobbers are still
 using list of August 1, 1899, or
 selling at net prices.

Iowa Day-Roy Forks.....60¢10%
 Victor, Hay.....60¢15¢24%
 Victor, Manure.....60%
 Victor, Header.....60%
 Champion, Hay.....60%
 Champion, Header.....60%
 Columbia, Hay.....60%
 Columbia, Header.....60%
 Columbia, Manure.....70%
 Columbia, Spading.....70¢12%
 Hawkeye Wood Barley.....40%
 W. & C. Potato Digger.....60%10%
 Acme Hay.....60%
 Acme Manure, 4 Hds.....60%10%
 Dakota Header.....60%
 Jackson Steel Barley.....60%20%
 Kansas Header.....60%
 W. & C. Favorite Wood Barley.....40%
 Plated.—See Spoons.

Frames—Saw—

White, 8'x7' Bar, per doz. 75¢80¢
 Red, 8'x7' Bar, per doz. \$1.00¢1.25
 Red, Dbl. Brace, per doz. \$1.40¢1.50

Freezers, Ice Cream—

Qt. 1 2 3 4 5
 Each.....\$1.30 \$1.60 \$1.90 \$2.20 \$2.50

Fruit and Jelly Presses—

See Presses, Fruit and Jelly.

Fry Pans—See Pans, Fry.

Fuse—Per 1000 Feet.

Hemp.....\$2.75
 Cotton.....3.20
 Waterproof Sgl. Taped.....3.65
 Waterproof Dbl. Taped.....4.40
 Waterproof Tpl. Taped.....5.15

Gates, Molasses and Oil—

Stebbins' Pattern.....80¢10%

Gauges—

Marking, Mortise, etc. 50¢10¢60%
 Chapin-Stephens Co.:

Marking, Mortise, etc. 50¢10¢50¢10¢10%
 Schell's Patent.....50¢10¢50¢10¢10%
 Door Hangers.....50¢50¢10%
 Stanley R. & L. Co.'s Butt and
 Rabbit Gauge.....25%
 Marking and Mortise.....60%
 Wire, Brown & Sharpe's.....25%
 Wire Morse's.....25%
 Wire P. S. & W. Co.....35%4

Gimlets—Single Cut—

Numbered assort-
 ments, per gro.

Nail, Metal, No. 1, 22.00; 2, 22.30

Spike, Metal, No. 1, \$4.00; 2, \$4.30

Nail, Wood Handled, No. 1,
 \$2.50; 2, \$2.60

Spike, Wood Handled, No. 1,
 \$4.30; 2, \$4.60

Glass, American Window

See Trade Report.

Glasses, Level—

Chapin-Stephens Co.....60¢60¢10¢10%

Glue, Liquid Fish—

Bottles or Cans, with Brush.....

International Glue Co. (Martin's).....40%

Grease, Axle—

Common Grade.....gro. \$1.50¢6.00

Dixon's Everlasting, 10-lb pails, ea. 80¢
 Dixon's Everlasting, in boxes, 1/2 doz.
 1 lb. \$1.20; 2 lb. \$2.00

Helmet Hard Oil.....25%

Griddles, Soapstone—

Pike Mfg. Co.....33%33%40%10%

Grindstones—

Bicycle Emery Grinder.....\$4.50
 Bicycle Grindstones, each.....\$2.50¢3.00

Pike Mfg. Co.:

Improved Family Grindstones.....\$2.00
 Pike Mower and Tool Grinder.....\$6.00
 Velox Ball Bearing, Mounted, Angle
 Iron Frames, each.....\$3.00

Grips, Nipple—

Perfect Nipple Grips.....40¢10¢22%

Halters and Ties—

Cow Ties.....60¢10¢60¢10¢5%

Covert Mfg. Co.:

Web.....45%
 Jute Rope.....45%
 Sisal Rope.....33%
 Cotton Rope.....45%
 Hemp Rope.....45%
 Covert's Saddlery Works:

Web and Leather Halters.....70%
 Jute and Manila Rope Halters.....70%
 Sisal Rope Halters.....60¢20%
 Jute, Manila and Cotton Rope
 Ties.....70%
 Sisal Rope Ties.....60¢10%

Oneida Community:

Am. Coil and Halters.....40¢40¢5%
 Am. Cow Ties.....45¢50%
 Niagara Coil and Halters.....45¢50%
 Niagara Cow Ties.....45¢50%10%5%

E. T. Rugg & Co.:

Leather Halters.....50%
 Web Halters and Webbing.....60%
 Jute and Sisal Rope Halters.....60%
 Jute and Sisal Horse and Cattle
 Ties.....60%
 Cotton Horse Ties.....60%
 Livery Ties, Braided.....60%

Hammers—

Handled Hammers—

Heller's Machinists.....40¢10¢40¢10%
 Heller's Farmers.....40¢10¢40¢10%
 Magnetic Tack, Nos. 1, 2, 3, 1 1/2,
 1 1/4, 1 1/8, 1 1/16.....50%
 Peck, Stow & Wilcox, Steel.....50%
 Fayette R. Plumb:

Plumb, A. E. Nail.....

Engineers' and B. F. Hay.....33%40%10¢7%4%

Machinists' Hammers.....50¢50¢10¢5%
 Riveting and Timbers.....40¢24¢40¢10¢24%

Sargent's C. S. New List.....40%

Heavy Hammers and

Sledges—

Under 3 lb., per lb., 50¢.....80¢10%
 3 to 5 lb., per lb., 40¢.....80¢10%
 Over 5 lb., per lb., 30¢.....80¢10%
 Wilkinson's Smith's.....1 lb. 9¢10¢10%

Handles—

Agricultural Tool Handles

Axe, Pick, etc. 60¢10¢60¢10¢5%
 Hoe, Rake, etc. 45¢50%
 Fork, Shovel, Spade, etc. 45¢50%

Long Handles.....45¢50%
 D Handles.....50¢50¢5%

Cross-Cut Saw Handles—

Alkins.....40%
 Champion.....45¢50%10%
 Diaston's.....50%
 Mechanics' Tool Handles—

Auger, assorted.....gro. \$2.50¢\$3.00
 Brad Axl.....gro. \$1.65¢\$1.75

Chisel Handles:

Apple Tanged Firmer, gro.
 assorted.....\$2.40¢\$2.65

Hickory Tanged Firmer, gro.
 assorted.....\$2.15¢\$2.40

Apple Socket Firmer, gro.
 assorted.....\$1.75¢\$1.95

Hickory Socket Firmer, gro.
 assorted.....\$1.45¢\$1.60

Hickory Socket Framing, gro.
 assorted.....\$1.60¢\$1.75

File, assorted.....gro. \$1.30¢\$1.40

Hammer, Hatchet, etc. 60¢10¢60¢10¢5%

Hand Saw, Varnished, doz.
 80¢85¢; Not Varnished.....65¢75¢

Plane Handles:

Jack, doz. 30¢; Jack, Bolted 75¢
 Fore, doz. 45¢; Fore, Bolted 90¢

Chapin-Stephens Co.:

Carving Tool.....40¢40¢10%
 Chisel.....65¢65¢10%
 File and Awl.....65¢65¢10%
 Saw and Plane.....40¢40¢10%
 Screw Driver.....40¢40¢10%
 Mill, Palls Adj. and Ratchet Auger
 Handles.....15¢10%
 Nicholson Simplicity File Handle.....

per gro. \$0.85¢\$1.50

Hangers—

NOTE.—Barn Door Hangers are gen-
 erally quoted per pair, without track,
 and Farmer Door Hangers per double set
 with track, etc.

Allith Mfg. Co.:

Reliable, No. 1.....per doz. \$2.00
 Reliable, No. 2.....per doz. \$2.00

Chicago Spring Butt Co.:

Friction.....25%
 Oscillating.....25%
 Big Twin.....25%

Chisholm & Moore Mfg. Co.:

Baggage Car Door.....50%
 Elevator.....30%
 Railroad.....50%

Cronk & Carrier Mfg. Co.:

Loose Axle.....60¢10%
 Roller Bearing.....70%

Griffin Mfg. Co.:

Solid Axle, No. 10, \$12.00.....70%
 Roller Bearing, No. 11, \$15.00.....70%
 Roller Bearing, Ex. Hy., No.
 22, \$18.00.....70%
 Hinged Hangers, \$16.00.....60¢10%

Lane Bros. Co.:

Parlor, Ball Bearing.....\$4.00
 Parlor, No. 105.....\$3.15
 Parlor, No. 105.....\$2.85
 Parlor, New Model.....\$2.80
 Parlor, New Champion.....\$2.25
 Barn Door, Standard.....60¢5%
 Hinged.....net \$6.40
 Covered.....60¢2%
 Special.....70¢45%

Lawrence Bros.:

Advance.....60¢10%
 Cleveland.....75%
 Clipper, No. 75.....60%
 Crown.....60¢10%
 Easy Parlor Door, Dbl. Set,
 \$2.50; Single Sets, \$1.25.....60¢5%
 Giant.....70¢45%
 Hummer.....70¢45%
 New York.....60¢10%
 Bearings.....75%
 Sterling.....60¢10%

McKinney Mfg. Co.:

No. 1, Special, \$15.....60¢10%
 No. 2, Standard, \$15.....60¢10%
 Hinged Hangers, \$16.....50%
 Meyers Stayon Hangers.....60¢45%

Richards Mfg. Co.:

Pioneer Wood Track No. 3, \$2.00
 Ball B'r'g St'l Track No. 10, \$5.00 10%
 Roller B'r'g St'l Track No. 12, \$2.15
 Roller B'r'g St'l Track No. 13, \$2.30
 Hero, Adj. Track No. 19, \$5.00 10%
 Adjustable Track Tandem Trol-
 ley Track No. 16.....50¢10%
 Seat Steel Track No. 8.....\$2.25
 Auto Adj. Track No. 22, \$4.00 10%
 Trolley B. D. No. 17.....\$1.25
 Trolley F. D. No. 120.....\$2.10
 Trolley F. D. No. 121.....\$2.25
 Trolley F. D. No. 150.....\$2.35
 Safety Underwriters F. D. No.
 122.....50%
 Tandem No. 4, 2 1/2 and 3, \$6.00 10%
 Palace, Adjustable Track No.
 132.....50¢10%
 Royal, Adjustable Track No.
 122.....50¢10%
 Ives' Wood Track No. 1.....\$2.00
 Trolley B. D. No. 23.....50¢10%
 Trolley B. D. No. 24.....\$1.30
 Trolley B. D. No. 27.....\$1.40
 Trolley B. D. No. 28.....\$1.60
 Roller Bearings Nos. 39, 41,
 43.....75%
 Anti-friction No. 42.....60¢20%
 Hinged Tandem No. 48, 60¢45%
 Folding Door B. B. Swivel No.
 135.....40%
 Safety Door Hanger Co.:

Storm King Safety.....60%
 U. S. Standard Hinge.....60%
 Stowell Mfg. & Foundry Co.:

Acme Parlor Ball Bearing.....40%
 Ajax Hinge Door.....40%
 Apex Parlor Door.....50¢10%
 Atlas.....60%
 Baggage Car Door.....50%
 Climax Anti-Friction.....50¢10%
 Elevator.....40%
 Express Door.....50%
 Freight Car Door.....60%
 Interstate.....50¢10%
 Lundy Parlor Door.....50¢10%
 Magic.....60%
 Matchless.....60¢10%
 Nansen.....70¢45%
 Ives, Wood Track.....50¢10%
 Railroad.....50¢10%
 Rex Hinge Door.....60%
 Street Car Door.....50%
 Steel Nos. 300, 404, 500.....50¢10%
 Underwriters' Fire Door.....40%
 Wild West Warehouse Door.....50%
 Zenith for Wood Track.....50¢10%

A. L. Sweet Iron Works:

Check Back.....70%
 Climax Anti-Friction.....50¢10%
 Eagle.....70%
 Erie Hinge.....60%
 New Perfect.....60%
 Pilot.....60%
 Pilot Hinge.....60%
 Rider Wooster.....60%
 Western Pattern.....70%
 Taylor Boggs F'y Co.'s Kid-
 der Roller Bearing.....50¢15¢10¢45%

Wilcox Mfg. Co.:

Bike Roller Bearing, 1/2 doz. \$5.00
 C. J. Roller Bearing.....60¢10%
 Cycle Ball Bearing.....50%
 Dwarf Ball Bearing.....40%
 Ives, Wood Track.....60¢10%
 L. T. Roller Bearing.....60¢10%
 New Era Roller Bearing.....50¢10%
 O. K. Roller Bearing.....60¢10%
 Prindle, Wood Track.....60%
 Richards' Wood Track.....60%
 Richards' Steel Track.....50¢10%
 Spencer Roller Bearing.....60¢10%
 Tandem, Nos. 1 and 2.....60%
 Underwriters' Roller Bearing.....40%
 Velvet.....50%
 Wilcox Auditorium Ball B'r'g.....20%
 Wilcox Barn Trolley No. 123, 40,
 111, and 122.....50%
 Wilcox Elev. Door, Loe. 111.....50%
 Wilcox Elev. Door No. 132.....50%
 Wilcox Fire Trolley, Roller
 Bearing.....30%
 Wilcox Le Roy Noiseless Ball
 Bearing.....40%
 Wilcox No. 2 Centurion.....50¢10%
 Wilcox O. K. Steel Track.....50%
 Wilcox O. K. Trolley.....50%
 Wilcox Trolley Ball Bearing.....40%
 Wilcox Wideman Narrow Gauge
 Ball Bearing.....40%
 For Track, see Rail.

Hangers—Garment—

Fullman Trouser, 1/2 gro. 1 pair Flat
 Aluminov. \$9.00; 1 pair Round Nick-
 eled, \$9.00; 1 pair Round Nickle-
 eled, \$9.00

Victor Folding.....\$2.00
 Western, W. G. Co.....70¢10%

Gate—

Myers' Patent Gate Hangers, 1/2 doz.
 net.....\$4.50

Joist and Timber—

Lane Bros. Co.....30%

Hasps—

Griffin's Security Hasp.....50%
 McKinney's Perfect Hasp, 1/2 doz.....50%

Hatchets—

Regular list, first quality.....50%
 Second quality \$1.00 per doz. less
 than first quality.

Heaters, Carriage—

Clark, P. S. \$1.75; No. 5B, \$2.00; No.
 3, \$2.25; No. 3D, \$2.75; No. 7D, \$3.00;
 No. 3E, \$3.25; No. 1, \$3.50.....15%
 Clark Coal, 1/2 doz. \$0.75.....10%

Hinges—

Blind and Shutter Hinges—

Surface Gravity Locking Blind:
 (Victor; National; 1868 O. P.;
 Niagara; Clark's O. P.;
 Clark's Tip; Buffalo.)

No. 1 1 1/2 2 3 4 5
 Doz. pair.....\$0.75 1.35 2.70

Mortise Shutter:
 (L. & P. O. S., Dixie, etc.)

No. 1 1 1/2 2 2 1/2
 Doz. pair.....\$0.70 .65 .60 .55

Mortise Reversible Shutter (Buf-
 falo, etc.):

No. 1 1 1/2 2
 Doz. pair.....\$0.70 .65 .60

North's Automatic Blind Fixtures,
 No. 2, for Wood, \$9.00; No. 3, for
 Brick, \$11.50.....10%
 Charles Parker Co. 70¢75%
 Parker Wire Goods Co.:

Hale & Benjamin Automatic Blind
 Hinges.....20%
 Hale's Blind Awning Hinges, No.
 110

Wrought Iron Hinges—
Strap and T Hinges, etc., list
December 20, 1904:

Light Strap Hinges.....70%	Extra 10@10.65%
Heavy Strap Hinges.....75%	
Light T Hinges.....65%	
Heavy T Hinges.....60%	
Extra H'y T H'g's.....70&10%	
Cor. Heavy Strap.....75&5%	
Cor. Es. Heavy T.....70&10%	

Screw Hook 6 to 12 in. 1b. 3%
14 to 20 in. 1b. 3%
22 to 36 in. 1b. 3%
and Strap.

Screw Hook and Eye:
3/4 to 1 inch.....1b. 6%
1 1/2 inch.....1b. 7%
2 inch.....1b. 8%

Hitchers, Stall—
Covert Mfg. Co., Stall Hitchers.....30&2%

Hods— Coal—

Inch.....15 16 17 18	Per doz.
Galv. Open.....\$2.50 2.75 3.00 3.25	
Jap. Open.....\$1.90 2.10 2.25 2.55	
Galv. Funnel.....\$3.00 3.30 3.60 3.90	
Jap. Funnel.....\$2.45 2.65 2.85 3.30	

Masons' Etc.—
Cleveland Wire Spring Co.:
Steel Brick, No. 182.....each \$0.95
Steel Mortar, No. 158.....each \$1.25

Hoes— Eye—
Scovill and Oval Pattern.....
60&10@60&10&10%
Grub, list Feb. 23, 1899.....
70&10@75&10%
D. & H. Scovill.....33%

Handled—

NOTE—Manufacturers are selling from the list of September 1, 1904, but many jobbers are still using list of August 1, 1899, or selling at net prices.

Cronk's Weeding No. 1, \$2.00; No. 2, \$2.25
Ft. Madison Cotton Hoe.....70&10&10%
Ft. Madison Crescent Cultivator Hoe.....
doz. 70&10%
Ft. Madison Mattock Hoes.....
doz. 66%
Regular Weight.....doz. 66%
Junior Size.....doz. 50%
Ft. Madison Spraying Hoe.....doz. 50%
Ft. Madison Dixie Tobacco Hoe.....
75&10&10%
Kretzinger's Cut Easy.....70&10%
Warren Hoe.....45&10%
W. & C. Ivanhoe.....75&10%
B. B. 6 in. Cultivator.....\$3.15
B. B. 6 in. Hoe.....\$3.35
Acme Weeding.....doz. net, \$4.35
W. & C. L'ning Shuffie Hoe, doz. \$4.85

Hoisting Apparatus—
See Machines, Hoisting.

Holders— Bit—

Angular, 3/4 doz. \$24.00.....45&10%
Bardsley's.....45%
Empire.....50%
Pullman.....50%
Superior.....33%

File and Tool—
Nicholson File Holders and File
Handles.....33&40%

Fruit Jar—
Triumph Fruit Jar Holder, 3/4 gross,
\$10.80; doz. \$12.25.....\$1.25

Hones—Razor—

Pike Mfg. Co., Belgian, German and
Swat.....50%

Hooks—Cast Iron—

Bird Cage, Reading.....40%
Bird Cage, Sargent's List, Nos. 29, 32,
33, 129, 132, 133 and 135.....50&10&10%
Clothes Line, Reading List.....40%
Clothes Line, Sargent's List.....50&10&10%
Coat and Hat, Sargent's List.....50&10%
Clothes Line, Stowell's.....70%
Coat and Hat, Reading.....45&20%
Coat and Hat, Stowell's.....70%
Coat and Hat, Wrightsville.....50%
Harness, Reading List.....50%
Harness, Stowell's.....50%
School House, Stowell's.....70%

Wire—

Belt.....60&10@%
Wire C. & H. Hooks.....
75&10@75&10&10%
Columbian Hdw Co., Gem.....70&10%
Parker Wire Goods Co., King.....70&10%
Van Wagoner, Coat and Hat.....70%
Western W. G. Co., Molding.....75%
Wire Goods Co.....
Acme.....60&10%
Chief.....70%
Crown.....75%
Czar.....50%
V Brace.....75%
Czar Harness.....50&10%

Wrought Iron

Box, 6 in., per doz., \$1.00; 8 in.,
\$1.25; 10 in., \$1.50.....doz. \$1.05@1.85
Cotton.....doz. \$1.05@1.85
Wrought Staples, Hooks, etc.,
See Wrought Goods.

Miscellaneous—

Hooks, Bench, See Stops, Bench.
Bush, Light, doz. \$1.75; Medium,
\$5.35; Heavy, \$6.25
Grass, best, all sizes, per doz. \$1.60
Grass, common grades, all sizes,
per doz. \$1.30
Whitewash.....1b. 5%
Hooks and Eyes:

Brass.....60&5@60&10&5%
Malleable Iron.....70&10&10%
Covert Mfg. Co., Gate and Scuttle
Hooks.....40%
Covert Saddlery Works' Self Locking
Gate and Door Hook.....60%
Ft. Madison Cut-Easy Corn Hooks,
3/4 doz. \$3.25 net

Bench Hooks—See Bench Stops.
Corn Hooks—See Knives, Corn.

Horse Nails—
See Nails, Horse.

Horseshoes—
See Shoes, Horse.

Hose, Rubber—
Garden Hose, 3/4-inch:
Competition.....ft. 5 @ 6
3-ply Guaranteed.....ft. 8 @ 9
4-ply Guaranteed.....ft. 10 @ 11
Cotton Garden, 3/4-in., coupled:
Low Grade.....ft. 8 @ 9
Fair Quality.....ft. 10 @ 11

Irons— Sad—
From 4 to 10.....lb. 3 @ 3 1/2
B. B. Sad Irons.....lb. 3 @ 3 1/2
Mrs. Potts', cents per set:
Nos.....50 55 60 65
Jap'd Tops.....68 63 78 75
Tin'd Tops.....71 69 81 78
New England Pressing, lb. 3 @ 4 1/2

Pinking—

Irons, Soldering

See Coppers.

Jacks, Wagon—

Covert Mfg. Co.:
Auto Screw.....30&2%
Steel.....45%
Covert's Saddlery Works:
Victor.....60&10%
Lockport.....50%
Lane's Steel.....30&10&2%
Richards' Tiger Steel, No. 130.....50&10%
Smith & Hemenway Co.'s.....25%

Kettles—
Brass, Spun, Plain.....20&25%
Enameled and Cast Iron—See Ware,
Hollow.

Knives—

Butcher, Kitchen, &c.—

Foster Bros' Butcher, &c.....30%
Wilkinson Shear & Cutlery Co.....50%

Corn—

Withington Acme, 3/4 doz. \$2.65;
Dent, \$2.75; Adj. Serrated, \$2.20;
Serrated, \$2.10; Yankee No. 1, \$1.50;
Yankee No. 2, \$1.15.

Drawing—

Standard List.....75@75&10%
C. E. Jennings & Co., Nos. 45, 46, 60,
Jennings & Griffin, Nos. 41, 42.....60%
Ohio Tool Co.'s.....70%
Swan's.....75%
Watrous.....16%
L. & J. J. White.....20&5@25%

Hay and Straw—

Serrated Edge, per doz. \$5.75 to \$6.00
Iwan's Sickle Edge.....doz. \$5.50
Iwan's Serrated.....doz. \$10.00

Mincing—

Buffalo.....3/4 gro. \$13.00

Miscellaneous—

Farriers'.....doz. \$3.00@3.25
Wootenholm's.....doz. \$3.00@3.25

Knobs—

Base, 2 1/2-inch, Birch, or Maple,
Rubber Tip.....gro. \$1.25@1.50

Carriage, Jap., all sizes.....
gro. 40&45%

Door, Mineral.....doz. 65@70%

Door, Por. Jap'd.....doz. 70@75%

Door, Por. Nickel.....doz. \$2.05@2.15

Bardsley's Wood Door, Shutters, &c. 15%
Picture, Sargent's.....60&10&10%

Lacing, Leather—
See Belting, Leather.

Ladders, Store, &c.—

Lane's Store.....25%
Myers' Noiseless Store Ladders.....50%
Richards' Mfg. Co.:
Improved Noiseless, No. 112.....50%
Climax Shelf, No. 113.....50%
Trolley, No. 109.....50%

Ladies, Melting—

L. & G. Mfg. Co. (low list).....25%
P. S. & W.....50%
Reading.....60%
Sargent's.....50&10%

Lanterns—Tubular—

Regular Tubular, No. 0.....doz. \$4.25@4.50

Lift Tubular, No. 0.....doz. \$4.75@5.00

Hinge Tubular, No. 0.....doz. \$4.75@5.00

Other Styles.....doz. \$4.40@4.65

Bull's Eye Police—

No. 1, 2 1/2-inch.....\$2.75@3.00
No. 2, 3-inch.....\$3.00@3.25

Lasts and Stands, Shoe—

Stowell's Atlas, Malleable Iron.....50%
Stowell's Badger, Cast Iron.....50%
Roggin's Latches, with screw.....doz. \$5@4 1/2

Door—

Cronk & Carrier Mfg. Co., No. 101,
3/4 doz. \$2.20
Cronk & Carrier Mfg. Co., Latch,
Hasp and Staples.....50%
Richards' Bull Dog, Heavy, No. 125,
Richards' Trump, No. 127.....\$1.50

Leaders, Cattle—

Small.....doz. 50¢; large, 60¢
Covert Mfg. Co.:
Cotton Hemp and Jute, 45%;
Sisal, 33%
R. & E.....33&4%

Lifters, Transom—

Lines—

Wire Clothes, Nos. 18 19 20
100 feet.....\$2.25 2.00 1.75
75 feet.....\$1.75 1.50 1.10
Anniston Waterproof Clothes, 50 ft.,
3/4 gro. \$25.00; Gilt Edge, \$25.00; Air
Line, \$23.00; Acme, \$18.00; Alabama,
\$17.00; Empire, \$16.00; Advance,
\$14.00; Eclipse, \$13.50; Chicago,
\$11.50; Standard, \$10.50; Columbia,
\$9.50; Allston, \$13.50; Calhoun, \$12.00.
Samson Cordage Works:
Solid Braided Chalk, No. 0 to 3, 40%
Silver Lake Braided Chalk, No. 0,
\$6.00; No. 1, \$4.50; No. 2, \$7.00; No. 3,
\$7.50.
Masons' Lines, Shade Cord, &c.:

White Cotton, No. 3 1/2, \$1.50; No. 4,
\$2.00; No. 4 1/2, \$2.50; Colors, No. 3 1/2,
\$1.75; No. 4, \$2.25; No. 4 1/2, \$2.75;
Linen, No. 3 1/2, \$2.50; No. 4, \$3.50;
No. 4 1/2, \$4.50.....20%
Tent and Awning Lines: No. 5,
White Cotton, \$7.50; Drab Cotton,
\$8.50.....20%
Clothes Lines, White Cotton, 50 ft.,
\$2.75; 60 ft., \$3.25; 70 ft., \$3.75; 75
ft., \$4.00; 80 ft., \$4.25; 90 ft., \$4.75;
100 ft., \$5.25.....20%

Locks— Cabinet—

Cabinet Locks.....\$3 1/2@3 1/4&7 1/2%

Door Locks, Latches, &c.—

*NOTE—Net Prices are very often made
on these goods.*
Reading Hardware Co.....40%
R. & E. Mfg. Co.....40%
Sargent & Co.....40&10%
Stowell's Steel Door Latches.....50%

Elevator—

Stowell's.....30%

Padlocks—

Wrought Iron.....75&10&5@80&5%
Net prices are general.
R. E. Mfg. Co. Wrought Steel and
Brass.....75&10%

Sash, &c.—

Ives' Patent:
Bronze and Brass.....62%
Crescent.....50&10%
Iron.....62%
Window Ventilating.....60%
Robison Patent Ventilating Sash
Lock.....40%
Wrought Bronze and Brass.....55%
Wrought Steel.....55%
Pullman Patent Ventilating Lock.....25%
Reading.....40%

Machines—Boring—

Com. Up't, without Augers.....\$2.00
Com. Ang'l'r, without Augers.....\$2.25
Swan's Improved.....40&10%
Jennings' Nos. 1 and 4.....Angular,
5.75
Millers' Falls.....5.75
Snell's, Rice's Pat. 2.50.....2.75

Corking—

Reinsinger Invincible Hand Power.....
3/4 doz. \$48.00

Fence—

Williams' Fence Machines.....each, \$5.50

Hoisting—

Moore's Anti-Friction Differential.....30%
F. W. Block, with Lock.....30%
Moore's Hand Hoist, with Lock.....20%
Brake.....20%

Ice Cutting—

Chandler's.....12%
Washing.....

Boas Washing Machine Co.: Per doz.

Boas No. 1.....\$37.00
Boas Rotary.....\$34.00
Champion Rotary Banner No. 1.....\$34.00
Standard Champion No. 1.....\$48.00
Standard Perfection.....\$26.00
Cint. Squire Western.....\$30.00
Uneda American, Round.....\$30.00

Maillets—

Hickory.....45&50%
Lignumvita.....45&50%

**Timbers— Hickory and Apple-
wood.....doz. 45&50%**

Mangers, Stable—

Swett Iron Works.....50%

Mashers, Vegetable—

Western W. G. Co., Potato.....60&10%
Elastic Steel (W. G. Co.), new list.....
50&10%

Mats, Door—

Keystone Wire Matting Co.:
Keystone.....50%
Ideal.....50%

Mattocks—

See Picks and Mattocks.

Milk Cans—See Cans, Milk.

Mills, Coffee, &c.—

Enterprise Mfg. Co.....25@30%
National list Jan. 1, 1902.....30%
Parker's Columbia & Victoria.....50&10&60%
Parker's Box and Slide.....50&10&60%
Swift, Lane Bros. Co.....30%

Mowers, Lawn

*NOTE—Net prices are generally quoted
cheapest.....all sizes, \$1.85@2.00.
Cheap.....all sizes, \$2.00@2.50.
Better Grade.....all sizes, \$2.50@4.50.
12 14 16 18-in.*

High Grade.....\$4.50 4.75 5.00.....60&5%

Continental.....60&5%

Great American.....70%

Great American Ball B'g, new list, 70 in.
Quaker City.....70%

Pennsylvania.....60&5%

Pennsylvania, Jr., Ball Bearing.....80%

Pennsylvania Golf.....50%

Pennsylvania Horse.....33&45%

Pennsylvania Pony.....40&5%

Granite State:

Style A, Low Wheel.....70&10&10&5%

Style B, Low Wheel.....70&10&5%

Style C, High Wheel.....70&10%

Style D, High Wheel.....70%

Philadelphia:

Style M. S. C. K. T.....70&5%

Style A, All Steel.....60&5%

Style E, High Wheel.....70&10&5%

Drexel and Gold Coin, special list, 50%
Nails—

Wire Nails and Brads, Papered,
List July 20, 1899.....85&5@85&10%
Cut and Wire. See Trade Report.
Hungarian, Finishing, Upholster-
ers' &c. See Tacks.

Horse—

No. 7 8 9 10
Anchor.....23 21 19 18.....40&5%
Champion.....23 21 19 18.....50%
Columbia.....23 21 19 18.....50%
New Haven.....23 21 19 18.....40&5%
Putnam.....23 21 19 18.....33&4%
New Putnam, 19 18 17 16.....10&10%
Western.....3/4 doz. \$8 1/2
Jobbers' Special Brands.....
per lb. 9@10¢

Picture—

14 2 2 1/2 3 3 1/2 in.
Brass H'd.....\$5 60 70.....gro
Por. Head.....1.10 1.10 1.10.....gro

Nippers—
See Pliers and Nippers.

Nuts—

Cold Punched.....Off list.

Mfrs. or U. S. Standard.

Square, Blank or Tapped.....\$1.90

Hexagon, Blank or Tapped.....\$5.30

Square, Blank, C. & T.....\$5.20

Hexagon, Blank, C. & T.....\$5.90

Hot Pressed:

Mfrs., U. S. or Nar. Gauge Stan'd.

Square, Blank.....\$5.30

Hexagon, Blank.....\$5.20

Square, Tapped.....\$5.20

Hexagon, Tapped.....\$5.70

Oakum—

Best.....lb. 6 1/4@6 1/2¢

U. S. Navy.....lb. 5 1/4@6¢

Navy.....lb. 4 1/4@5¢

Plumbers' Spun Oakum.....2 1/2@3¢

In carload lots 1/2 lb. off, 1.0 b.

New York.

Oil Tanks—See Tanks, Oil.

Oilers—

Brass and Copper.....50&10%

Tin or Steel.....70&10&5%

Zinc.....70&10&5%

Chase or Paragon—

Brass and Copper.....50&10%

Tin or Steel.....65&10%

Eureka Improved.....	each \$20.00
Family Bay State.....	doz. \$15.00
Improved Bay State.....	doz. \$15.00
Little Star.....	doz. \$5.00
New Lightning.....	doz. \$7.00
Reading 72.....	doz. \$3.25
Reading 78.....	doz. \$6.25
Rocking Table.....	doz. \$6.25
Turn Table 96.....	doz. \$6.00
White Mountain.....	doz. \$5.00

Potato—	
Saratoga.....	doz. \$7.00
White Mountain.....	doz. \$6.00

Picks and Mattocks—	
List Feb. 23, 1899.....	.75%
Cronk's Handled Garden Mattock.....	.33%
doz., \$6.40.....	

Pinking Irons—	
See Irons, Pinking.	

Pins, Escutcheon—	
Brass.....	60¢@60¢@10%
Iron, list Nov. 11, '85.....	60¢@60¢@10%

Pipe, Cast Iron Soil—	
Carload lots.....	

Standard.....	2-6 in.....60%
Extra Heavy, 2-6 in.....	70%
Fittings.....	75%

Pipe, Merchant—	
Consumers, Carload.	

	Blk. Galv.	Blk. Galv.	Blk. Galv.
1/2 & 1/4 in.....	71%	55%	68%
3/4 in.....	73%	59%	70%
1 in.....	75%	63%	78%
1 1/4 in.....	79%	69%	86%
1 1/2 in.....	74%	69%	71%

Pipe, Vitrified Sewer—	
Carload lots.....	

Standard Pipe and Fittings, 2 to 24 in.....	.68%
New England.....	.71%
New York and New Jersey.....	.71%
Maryland, Delaware, E. Pa.....	.71%
West, Pa. and West Va.....	.71%
Virginia.....	.71%
Ohio, Michigan and Ky.....	.71%
Indiana.....	.71%

Pipe, Stove—	
Edwards' Nested Stove Pipe:	

	C. L.	L. C. L.
5 in., per 100 joints.....	\$7.00	\$8.00
6 in., per 100 joints.....	7.50	8.50
7 in., per 100 joints.....	8.50	9.50

Planes and Plane Irons—	
Wood Planes—	

Bench, first qual.....	40¢@10%
Bench, second qual.....	50¢@10%
Molding.....	31¢@10%
Bailey's (Stanley R. & L. Co.).....	40%
Chapin-Stephens Co.:.....	

Bench, First Quality.....	40¢@40¢@10%
Bench, Second Quality.....	50¢@50¢@10%
Molding.....	31¢@31¢@10%
Toy and German.....	30¢@30¢@10%
Chapin's.....	60%
Ohio Tool Co.:.....	

Bench, First Quality.....	40¢@40¢@10%
Bench, Second Quality.....	50¢@50¢@10%
Molding.....	31¢@31¢@10%
Adjustable Wood Bottom.....	50%
Union.....	60%

Iron Planes—	
Bailey's (Stanley R. & L. Co.).....	40%
Chapin's Iron Planes.....	50¢@10%
Miscellaneous Planes (Stanley R. & L. Co.).....	35%
Ohio Tool Co.'s Iron Planes.....	60¢@10%
Sargent's.....	60¢@10%
Union.....	60%

Plane Irons—	
Wood Bench Plane Irons.....	25¢@10%

Buck Bros.....	30%
Chapin-Stephens Co.....	30¢@30¢@10%
Ohio Tool Co.....	30%
Stanley R. & L. Co.....	35%
Union.....	60%
L. & J. White.....	50¢@25%

Planters, Corn, Hand—	
Kohler's Eclipse.....	doz. \$8.50

Plates—	
Felco.....	lb. 4¢@4¢

Self-Sealing Pie Plates (R. M. Co.).....	doz. \$2.00.....50%
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Pliers and Nippers—	
Button Pliers.....	75¢@10¢@75, 10, 5%

Gas Burner, per doz., 5 in., \$1.25 @ \$1.30; 6 in., \$1.45 @ \$1.50.	
Gas Pipe.....	7 8 10 12 in.

Acme Nippers.....	50¢@5%
Cronk & Carrier Mfg. Co.:.....	

American Button.....	75¢@10%
Cronk's.....	60%
Stub's Pattern.....	50%
Combination and others.....	33%
Heller's Farriers' Nippers, Pincers and Tools.....	40¢@10¢@40¢@10%
The Nettleton Mfg. Co. Reversible Cutting Nippers.....	40%
P. S. & W. Tinner's Cutting Nippers.....	40%
Wm. Schollhorn Co.:.....	

Bernard.....	33%
Elm City.....	33%
Lodi.....	50%
Paragon.....	50%
Swedish Slide, End and Diagonal Cutting Pliers.....	50%
Utica Drop Forge & Tool Co.:.....	
Pliers and Nippers, all kinds.....	50%

Plumbs and Levels—	
Chapin-Stephens Co.:.....	

Plumbs and Levels.....	30¢@30¢@10%
Chapin's Imp. Brass Cor. 30¢@40¢@10%	
Pocket Levels.....	30¢@30¢@10%
Disston's Plumbs and Levels.....	10%
Disston's Pocket Levels.....	10%
C. E. Jennings & Co.'s Iron, Adjust-able.....	40¢@71%
Stanley R. & L. Co.....	45%
Stanley's Duplex.....	35%
Woods' Extension.....	33%

Poachers, Egg—	
Buffalo Steam Egg Poachers, doz. No. 1, \$6.00; No. 2, \$9.00; No. 3, \$9.00; No. 4, \$12.00.....	50%

Points, Glaziers'—

Bulk and 1-lb. papers.....	1b. 10¢
1/2-lb. papers.....	1b. 9¢@10¢
1/4-lb. papers.....	1b. 9¢@11¢

Pokes, Animal—

Ft. Madison Hawkeye.....	doz. \$3.25
Ft. Madison Western.....	doz. \$4.00

Police Goods—

Manufacturers' Lists.....	25¢@25¢@5%
Tower's.....	25%

Polish—Metal, Etc—

Glasbrite, No. 2, 5 lb can (powder), each, \$1.25; do doz., \$12.00; No. 2, 10 lb can (cake), each, \$2.50; do doz., \$24.00.	
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Prestoline Liquid, No. 1 (1/2 pt.), do doz., \$3.00; No. 2 (1 qt.), \$9.72.....	40%
Prestoline Paste.....	40%

U. S. Metal Polish Paste, 3 oz boxes, do doz., 50¢; do doz. \$4.50; 1 lb boxes, do doz., \$1.25; 1 lb boxes, do doz., \$2.25.	
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U. S. Liquid, 8 oz cans, do doz., \$1.25; do doz., \$12.00.	
Barkeepers' Friend Metal Polish, do doz., \$1.75; do doz., \$18.00.	
Wynn's White Silk, 1/2 pt. cans, do doz., \$2.00.	

Stove—

Black Eagle Benzine Paste, 5 lb cans, do doz., \$1.00.	
Black Eagle, Liquid, 1/2 pt. cans, do doz., \$1.00.	
Black Kid Paste, 5 lb cans, do doz., \$1.00.	
Ladd's Black Beauty Liquid, per 100 tins.....	\$6.75

Joseph Dixon's, do gr. \$5.75.....	10%
Dixon's Plumbago.....	10%
Kierulff's.....	10%
Gem, do gr. \$4.50.....	10%
Japanese, do gr. \$3.50.....	10%
Jet Black.....	10%
Peerless Iron Enamel, 10 oz. cans, do doz., \$1.50.	

Wynn's:	
Black Silk, 5 lb pail.....	each 70¢
Black Silk, 1/2 lb box.....	do doz. \$1.00
Black Silk, 5 oz. box.....	do doz. \$0.75
Black Silk, 1/2 pt. can.....	do doz. \$1.00

Poppers, Corn—

1 qt., Square.....	gro. \$9.00
1 qt., Round.....	gro. \$10.00
1 1/2 qt., Square.....	gro. \$11.00
2 qt., Square.....	gro. \$13.00

Post Hole and Tree Augers and Diggers—	
See also Diggers, Post Hole, &c.	

Posts, Steel—

Steel Fence Posts, each, 5 ft., 42¢; 6 ft., 46¢; 6 1/2 ft., 48¢.	
Steel Hitching Posts.....	each \$1.30

Potato Parers—

See Parers, Potato.	
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Pots, Glue—

Enamelled.....	40%
Tinned.....	35%

Powder—

In Canisters:	
Duck, 1 lb.....	each 45¢
Fine Sporting, 1 lb.....	each 75¢
Rifle, 1/2 lb.....	each 15¢
Rifle, 1 lb.....	each 25¢

In Kegs:	
12 1/2-lb. kegs.....	\$3.50
25-lb. kegs.....	\$4.50
King's Semi-Smokeless:	

Keg (25 lb bulk).....	\$6.50
Half Keg (12 1/2 lb bulk).....	\$3.50
Quarter Keg (6 1/4 lb bulk).....	\$1.90
Case 24 (1 lb cans bulk).....	\$2.50
Half case (1 lb cans bulk).....	\$4.50
King's Smokeless:	

Keg (25 lb bulk).....	\$12.00
Half Keg (12 1/2 lb bulk).....	6.25
Quarter Keg (6 1/4 lb bulk).....	3.25
Case 24 (1 lb c. bks).....	7.25
Half case 12 (1 lb c. bks).....	8.75
Robin Hood Smokeless Shot Gun.....	50¢@20%

Presses—

Fruit and Jelly—	
Enterprise Mfg. Co.....	20¢@25%

Seal Presses—

Morrill's No. 1, do doz., \$20.00.....	50%
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Pruning Hooks and Shears	
See Shears.	

Pullers, Cork—

Invincible Cork Puller.....	\$21.00
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Pullers, Nail—

Cyclones.....	50%
Miller's Falls, No. 3, do doz., \$12.00.....	33¢@10%
Morrill's No. 1, Nail Puller, do doz., \$20.00.....	50%
Pearson No. 1, Cyclone Spike Puller, each \$30.00 lb cans bulk.....	14.00
Scranton Case Lots.....	50%
No. 2B (large).....	\$5.50
No. 3B (small).....	\$5.00
Smith & Hemenway Co.:.....	
Diamond B. No. 2, case lots.....	do doz. \$6.00
Diamond B. No. 3, case lots.....	do doz. \$5.50
Giant No. 1, do doz., \$18; No. 2, \$16.50; No. 3, \$15.....	33¢@
Staple Pullers.....	60%
Parrot Tack and Stub Puller, do doz., 75¢; do doz., \$4.00.	

Pulleys, Single Wheel—

Inch.....	1/2 1 1/2 2 3
Awning or Tackle.....	doz. \$0.30 .15 .60 1.05
Hay Fork, Swivel or Solid Eye.....	doz., 4 in., \$1.25; 5 in., \$1.55
Inch.....	2 1/2 3 4
Hot House, doz.....	\$0.63 .83 1.00
Inch.....	1/4 1/2 1 1 1/2 2
Screw, doz.....	\$0.16 .19 .23 .30
Inch.....	1/4 1/2 1 1 1/2 2
Slide, doz.....	\$0.25 .30 .35 .40
Inch.....	1/2 1 1 1/2 2 3

Stowell's:	
Ceiling or End, Anti-Friction.....	60¢@10%
Dumb Waiter, Anti-Friction.....	60¢@10%
Electric Light.....	60%
Slide, Anti-Friction.....	60¢@13%

Sash Pulleys—

Common Frame; Square or Round End, per doz, 1 1/2 in. & 2 in.....	16¢@19¢
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Auger Mortise, no Face Plate, per doz., 1 1/2 in. & 2 in.....	16¢@19¢
Acme.....	1 1/2 in., 16¢; 2 in., 19¢
Fox-All-Steel, Nos. 3 and 1, 2 in.....	do doz. 50%

Grand Rapids All Steel Noiseless.....	50%
Ideal.....	70¢@10%
Niagara.....	1 1/2 in., 16¢; 2 in., 19¢
No. 26, Troy.....	1 1/2 in., 14¢; 2 in., 16¢
Star.....	1 1/2 in., 16¢; 2 in., 19¢
Tackle Blocks—See Blocks.	

Pumps—	
Cistern.....	60¢@60¢@10%
Pitcher Spout.....	80¢@80¢@10%
Wood Pumps, Tubing, &c.....	45¢@50%
Barnes Dbl. Acting (low list).....	50%
Barnes' Pitcher Spout.....	75¢@10¢@5%
Contractors' Rubber Diaphragm No. 2, B. & L. Block Co.....	\$16.00
Delay Spray Pump.....	do doz. \$6.75
Flint & Walling's, Fast Mail Hand, (low list).....	55%
Flint & Walling's Fast Mail (low list).....	55¢@5%
Flint & Walling's Tight Top Pitcher.....	80%
National Specialty Mfg. Co., Measur-ing.....	\$6.00
Mechanical Sprayer.....	\$6.00
Myers' Pumps (low list).....	50%
Myers' Power Pumps.....	50%
Myers' Spray Pumps.....	50¢@10%

Pump Leathers—	
Plunger and Lower Valve—Per gro.:.....	

Inch.....	2 1/2 3 3 1/2 4
Inch.....	2.20 2.50 2.75 3.00
Inch.....	3 3 1/2 3 3/4 4
Inch.....	\$3.30 3.60 3.85 4.10 4.40

Plunger Cup Leathers—Per 100:	
Inch.....	2 1/2 3 3 1/2 4
Inch.....	\$2.75 3.85 5.00 6.00

Punches—	
Saddlers' or Drive, good.....	doz. 50¢@75¢
Spring, single tube, good quality.....	\$1.75@2.00
Revolving (4 tubes).....	doz. \$3.50@3.75

Bemis & Call Co.'s Cast St'l Drive.....	50%
Bemis & Call Co.'s Check.....	50%
Morrill's Nos. 1A, 1A, 1B, 1C.....	50%
Hercules, 1 die, each \$5.00.....	50%
Niagara Hollow Punches.....	40%
Niagara Solid Punches.....	55¢@10%
Wm. Schollhorn Co.:.....	

Bernard.....	33%
Lodi.....	50%
Paragon.....	50%
Steel Screw, B. & K. Mfg. Co.....	50%
Tinner's Hollow, P. S. & W. Co.....	40%
Tinner's Solid, P. S. & W. Co., do doz., \$1.41.....	60%

Rail—Barn Door, &c.—	
Sliding Door, Painted Iron.....	2 1/2¢@2 1/2¢

Sliding Door, Wrought Brass.....	1 1/2 in., lb., 36¢.....30%
Allith Mfg. Co.:.....	
No. 1, Reliable Hgr. Track, do ft. 5 1/2¢	
No. 2, Reliable Hgr. Track, do ft. 7¢	
Cronk's:	

Double Braced Steel Rail.....	do ft. 2 1/2¢
O. N. T. Rail.....	2 1/2¢
Griffin's:	

xxx, do 100 ft., 1 x 3-16 in., \$3.00;	
Cast Rail.....	3-16 in., 3.50.
Hinged Hanger, do 100 ft., 1 x 3-16 in., \$3.10; 1 1/2 x 3-16 in., \$3.60.	
Lane's:	

Hinged Track, do 100 ft., 1 in., \$3.60;	
1 1/2 in., \$4.10.	
O. N., do 100 ft., 1 in., \$2.75; 1 1/2 in., \$3.10; 1 1/2 in., \$4.00.	
Standard, 1 1/2 in., do 100 ft. \$4.00	
Lawrence Bros.:.....	

do 100 ft. No. 201, \$4.00; No. 202, \$4.00	
New York, 1 x 3-16 in., do 100 ft. \$2.75	
McKinney's:	

Hinged Hanger Rail, do ft., 11¢.....	50%
None Better.....	do ft. 3¢
Standard.....	do ft. 4¢
Myers' Stayon Track.....	60¢@10%
Richards' Mfg. Co.:.....	

Common 1 x 3-6 in., \$2.25; 1 1/2 x 3-6 in., \$2.50; 1 1/2 x 3-6 in., \$2.75.	
Special Hinged Hanger Rail.....	

Rulers, Desk—

Simpson & Son: Boxwood and Maple.....30&10%

Rules

Boxwood 60&10&10%
Ivory 35&10&35&10&5%
 Chapin-Stephens Co.:
 Boxwood 60&10&10%
 Flexiford 27&10&10&2%
 Ivory 35&10&10&10%
 Miscellaneous 50&10&10&10%
 Combination 50&10&10%
 Stationers 10&10&10%
 Keuffel & Esser Co.:
 Folding, Wood 35&10%
 Folding, Steel 33&10%
 Lufkin's Steel 50&10%
 Lufkin's Lumber 60%
 Stanley R. & L. Co.:
 Boxwood 62%
 Ivory 45%
 Miscellaneous 60%
 Zig Zag 40%
 Zig Zag, Pin Joint 42%
 Tupper Nut Co.:
 Boxwood 60&10&10%
 Ivory 35&10&35&10&10%

Sash Balances—

See *Balance, Sash.*

Sash Locks—

See *Locks, Sash.*

Sash Weights—

See *Weights, Sash.*

Sausage Stuffers or Fillers

See *Stuffers or Fillers, Sausage.*

Saw Frames—

See *Frames, Saw.*

Saw Sets—See Sets, Saw.**Saw Tools—See Tools, Saw.****Saws—**

Atkins':
 Circular 50%
 Band 50&10&60%
 Cross Cuts 35&5%
 Mulay, Mill and Drag 50%
 One-Man Saw 40%
 Wood Saws 40%
 Chapin-Stephens Co.:
 Turning Saws and Frames, 30&30&10%
 Diamond Saw & Stamping Tools 30&10&10%
 Sterling Kitchen Saws 30&10&10%
 Disston's:
 Circular, Solid and Ins'ted Tooth, 50%
 Band, 2 to 14 in. wide 60%
 Band, 1/4 to 1 in. 60%
 Crosscuts 50%
 Narrow Crosscuts 50%
 Mulay, Mill and Drag 50%
 Framed Woodsaws 35%
 Woodsaw Blades 35%
 Woodsaw Rods 25%
 Hand Saws, Nos. 12, 90, 9, 16, 1100, 118, 120, 76, 77, 8 25%
 Hand Saws, Nos. 7, 107, 107 1/2, 3, 1 25%
 0, 00, Combination 35%
 Compass, Key Hole 35%
 Butcher Saws and Blades 35%
 C. E. Jennings & Co.'s:
 Back Saws 25%
 Butcher Saws 30%
 Compass and Key Hole Saws 35%
 Framed Wood Saws 35%
 Hand Saws 35%
 Wood Saw Blades 35%
 Millers Falls:
 Butcher Saws 15&10%
 Star Saw Blades 15&10%
 Peace & Richardson's Hand Saws 30%
 Simonds':
 Circular Saws 50%
 Crescent Ground Cross Cut Saws 35%
 Gang Mill, Mulay and Drag Saws 50%
 Band Saws 50%
 Back Saws 25&10&10%
 Butcher Saws 25&10&10%
 Hand Saws 25&10&10%
 Hand Saws, Bay State Brand 40%
 Compass, Key Hole, &c. 25&10&10%
 Wood Saws 35&10&10%
 Springfield Mach. Screw Co.:
 Diamond Kitchen Saws 40&10&50%
 Butcher Saws 35&10&10%
 Wheeler, Madden & Clemson Mfg. Co.'s Cross Cut Saws 50%

Hack Saws—

Atkins' Hack Saw Blades A A A 25%
 Disston's:
 Concave Blades 25%
 Keystone 40%
 Hack Saw Frames, The Best 35%
 Fitchburg File Works, The Best 35%
 C. E. Jennings & Co.'s:
 Hack Saw Frames, Nos. 175, 180 40&10%
 Hack Saws, Nos. 175, 180, complete 40&10%
 Goodell's Hack Saw Blades 40%
 Griffin's Hack Saw Blades 35&10&10%
 Springfield Mach. Screw Co.:
 Diamond Hack Saw Blades 35%
 Diamond Hack Saw Frames 50%
 Star Hack Saws and Blades 15&10%
 Sterling Hack Saw Blades 30&10&10%
 Sterling Power Hack Saw Machines, each, No. 1, \$25.00; No. 2, \$30.00 10%
 Victor Hack Saw Blades 25%
 Victor Hack Saw Frames 40%
 Barnes' No. 7, \$15 25%
 Barnes' Scroll Saw Blades 40%
 Barnes' Velocipede Power Scroll Saw, without boring attachment, \$18 25%
 Lester, complete, \$10.00 15&10%
 Rogers, complete, \$4.00 15&10%

Scalpers, Fish—

Covert's Saddlery Works 80&10%

Scales—

Family, Turnbull's 50&10&10%

Counter:

Hatch, Platform, 1/2 oz. to 4 lbs. 25

Two Platforms, 1/2 oz. to 8 lbs. 25

One Platform, Plain, \$1.70 to \$1.90 25

One Platform, Stpd. \$1.85 to \$2.15 25

Chatillon's 25

Eureka 25

Favorite Trip Scales 40%
 Crocker's Trip Scales 50%
 Chicago Scale Co.:
 The "Little Detective" 25 lbs 50%
 Union or Family No. 2 60%
 Portable Platform (reduced list) 50%
 Wagon or Stock (reduced list) 25%
 The Standard 50%
 The Standard R. R. and Wagon 50%

Scrapers—

Box, 1 Handle doz. \$2.00 to \$2.25
 Box, 2 Handle doz. \$2.60 to \$2.85
 Ship Light, \$2.00; Heavy, \$4.50
 Adjustable Box Scraper (S. R. & L. Co.), \$6.00 45%
 Chapin-Stephens Co., Box 30&30&10&10%

Screens, Window and**Frames—**

Maine Screen Frames 40&10&5%

See also *Doors.*

Screws—Bench and Hand

Bench, Iron, doz., 1 in. \$2.50 to \$2.75
 Bench, W'd, Beech, doz. 3/4 \$3.50 to \$3.75
 Hand, Wood 30&10&45%
 R. Bliss Mfg. Co., Hand 30&10&10%
 Chapin-Stephens Co., Hand 30&10&10%
 Ohio Tool Co., Bench and Hand 30%
 Coach, Lag and Hand Rail—Lag, Cone Point, list Oct. 1, '99 75&15%
 Coach, Gimlet Point, list Oct. 1, '99 75&10%
 Hand Rail, list Jan. 1, '81 70&10&75%

Jack Screws—

Standard List 80&10&45%
 Millers Falls 50&10&10%
 Millers Falls, Roller 50&10%
 P. & W. 60%
 Sargent 70&10%
 Swett Iron Works 75&10&80&45%

Machine—

List Jan. 1, '98:

Flat or Round Head, Iron 50&10&10%

Flat or Round Head, Brass 50&10&10%

Set and Cap—

Set (Iron) 80%

Set (Steel), net advance over Iron 25%

Sq. Hd. Cap 75%

Hex. Hd. Cap 75%

Rd. Hd. Cap 60&10%

Fillister Hd. Cap 60&10&10%

Wood—

List July 23, 1903.

Flat Head, Iron 87&10&10%

Round Head, Iron 85&10&10%

Flat Head, Brass 85&10&10%

Round Head, Brass 80&10&10%

Flat Head, Bronze 77&10&10%

Round Head, Bronze 75&10&10%

Drive Screws 87&10&10%

Scroll Saws—

See *Saws, Scroll.*

Scythes—

Per doz.

Grass, No. 1, Plain Finish \$6.25

Clipper, Bronzed Webb \$6.50

No. 3 Clipper, Pol'd Webb \$6.75

No. 6 Clipper & Solid Steel \$7.00

Bush, Weed & Bramble, No. 2 \$6.50

Grain, No. 1 \$8.25

Bronzed Webb, No. 1 \$8.50

No. 3 & 4 Clipper, Grain \$8.75

Solid Steel No. 6 \$9.25

Seeders, Raisin—

Enterprise 25&30%

Sets—Awl and Tool—

Aiken's Sets, Awl and Tools: No. 20, 30 doz. 60&10%

Fray's Adj. Tool Handles, No. 1, \$12; 2, \$18; 3, \$12; 4, \$9; 5, \$7 50%

C. E. Jennings & Co.'s Model Tool Holders 30%

Millers Falls Adj. Tool Handles, No. 1, \$12; No. 4, \$12; No. 5, \$18 15&10%

Garden Tool Sets—

Ft. Madison Three Plows, Hoe, Rake and Shovel 30 doz sets \$9.00

Sets, Nail—

Octagon gro. \$3.50 to \$3.75

Buck Bros. 27&10%

Cannon's Diamond Point, 30 doz. \$12.40

Mayhew's 30 doz. \$9.00

Snell's Cor'gated, Cup Pt. 30 doz. \$7.20

Snell's Knurled, Cup Pt. 30 doz. \$7.20

Springfield Mach. Screw Co.:
 Diamond Knurled Cup Pt. 30 doz. \$7.50

Rivet—

Regular list 75&75&10%

Saw—

Aiken's:
 Genuine 50&10%
 Imitation 50&10%
 Atkin's:
 Criterion 40%
 Adjustable 40%
 Bemis & Call Co.'s:
 Cross Cut 30%
 Diamond 20%
 Disston's Star and Monarch 25%
 Morrill's No. 1, \$15.00 50%
 No. 3 and 4, Cross Cut, \$20.00 50%
 No. 5, Mill, \$30.00 50%
 No. 10, 11, 95, \$15.00 50%
 No. 1 Old Style, \$10.00 50%
 Special, \$16.25 50%
 Giant Royal Cross Cut 30 doz. \$8.00
 Royal, Hand 30 doz. \$4.50
 Taintor Positive 30 doz. \$3.75

Shaving—

Fox Shaving Sets, No. 30 30

Smith & Hemenway Co.'s 80%

Sharpeners, Knife—

Chicago Wheel & Mfg. Co. 70%

Pike Mfg. Co.:
 Fast Cut Pocket Knife Hones, 30 doz. \$1.50
 Mounted Kitchen Sand Stone, 30 doz. \$1.50
 Natural Grit Carving Knife Hones, 30 doz. \$3.00
 Quick Cut Emery Carving Knife Hones, 30 doz. \$1.50
 Quick Edge Pocket Knife Hones, 30 doz. \$2.50

Skate—

Smith & Hemenway Co. 20%

Shaves, Spoke—

Iron doz. \$1.10 to \$1.25
 Wood doz. \$1.75 to \$2.25
 Bailey's (Stanley R. & L. Co.) 45%
 Razor Edge (Stanley R. & L. Co.) 35%
 Chapin-Stephens Co. 30&30&10&10%
 Goodell's, 30 doz. \$9.00 15&10%
 Wood's #1 and #2 50%

Shears—

Cast Iron, 7 8 9 in.
 Best \$16.00 18.00 20.00 gro.
 Good \$13.00 15.00 17.00 gro.
 Cheap \$5.00 6.00 7.00 gro.

Straight Trimmers, &c.—

Best quality Jap. 70&70&10%
 Best quality, Nickel 60&60&10%
 Fair quality, Jap. 80&180&45%
 Fair quality, Nickel 75&7&10%
 Tailors' Shears 40&10&10%
 Acme Cast Shears 40&40&5%
 Wilson's Tailor's Shears 10%
 Wilkinson's Sheep, 1900 list 50&10%

Tinners' Snips—

Steel Blades 20&45&20&19%
 Steel Cold Blades 40&10&50%
 Forged Handles, Steel Blades, Berlin, 50&50&45%
 Heinisch's Snips 40%
 Jennings & Griffin Mfg. Co.'s, 6 1/2 to 10 in. 50%
 Niagara Snips 40%
 P. S. & W. Forged Handles 20%

Pruning Shears—

Cronk's Hand Shears 33%
 Cronk's Wood Handle Shears 33%
 Diston's Combined Pruning Hook and Saw, 30 doz. \$18.00 25%
 Diston's Pruning Hook, 30 doz. \$12.00 25%
 John T. Henry Mfg. Co.:
 Pruning Shears, all grades 50&10%
 P. S. & W. Cor'gated 50&10%
 Wilkinson's Hedge, 1900 list 50&10%
 Wilkinson's Lawn and Border 50%

Sheaves—Sliding Door—

Stowell's Anti-Friction 50%
 Patent Roller, Hatfield's, Sargent's list 70&10%
 Reading 40%
 R. & E. list 33%
 Wrightsville Hatfield Pattern 80%

Sliding Shutter—

Reading list 40%
 R. & E. list 33%
 Sargent's list 10&10%

Shells—Shells, Empty—

Brass Shells, Empty:
 Climax, Club, Rival, 10 and 12 gauge 65&5%
 Paper Shells, Empty:
 Acme, Ideal, Leader, New Rapid, Mag. 10, 12, 16 and 20 gauge, 25&3%
 Blue River, Climax, Challenger, Monarch, Defiance, Repeater, Yellow Rival, 10, 12, 16 and 20 gauge 20%
 Climax, Union, League, New Rival, 10 and 12 gauge 25%
 Climax, Union, League, New Rival, 14, 16 and 20 gauge 25%
 Expert, Metal Lined and Fugson, 10, 12, 16 and 20 gauge 33%
 Robin Hood, Low Brass 20&5%
 Robin Hood, High Brass 30&5%

Shells, Loaded—

Loaded with Black Powder 40%
 Loaded with Smokeless Powder, medium grade 40&5%
 Loaded with Smokeless Powder, high grade 40&10&10%
 Robin Hood Smokeless Powder:
 Robin Hood, Low Brass 50%
 Comets, High Brass 50&10&5%

Shoes, Horse, Mule, &c.—

F.O.B. Pittsburgh:
 Iron per keg \$4.00
 Steel per keg \$3.75
 Burden's, all sizes 30 doz. \$3.90

Shot—

Drop, up to B, 25-lb. bag \$1.80
 Drop, B and larger per 25-lb. bag, \$2.05
 Buck, 25-lb. bag \$2.05
 Chilled, 25-lb. bag \$2.05

Shovels and Spades—

Association List, Nov. 15, 1902, 40%
 Snow Shovels \$2.75 to \$3.00
 Long Handle \$3.25 to \$3.50
 Wood and Mail, D. Handle \$3.25 to \$3.50

Sieves and Sifters—

Hunter's Imitation gro. \$9.50 to \$10.00
 Hunter's Genuine per gro. \$12.00 to \$12.50
 Buffalo Metallic Blue, R. M. Co., 30 gr. 14&16 16&18 18&20 \$13.20 \$13.50 \$14.40
 Shaker (Barley's Pat.) Flour Sifters, 30 doz. \$2.00 20%

Sieves, Seamless Metallic

Mesh 14 16 18 20
 Iron Wire \$1.05 1.05 1.10 1.20
 Tinned Wire \$1.15 1.15 1.20 1.30

Sieves, Wooden Rim—

Nested, 10, 11 and 12 inch.
 Mesh 18, Nested doz. \$0.90 to \$0.95
 Mesh 20, Nested doz. \$1.00 to \$1.05
 Mesh 24, Nested doz. \$1.30 to \$1.40

Sinks, Cast Iron—

Painted, Standard list:
 12 x 12 to 22 x 36 in. 60&5%
 20 x 40 to 24 x 50 in. 55%
 24 x 60 to 24 x 120 in. 35%
 Barnes' low list:
 20 x 40 to including 20 x 36 in. 60%
 Up to and including 20 x 50 in. 55%

Skates, Wagon—

Cast Iron 80&10&10%
 Steel 40&10&10%

Slates, School—

Factory Shipments.
 "D" Slates 50&50&10%

Eureka, Unexcelled Noiseless—

60&5 tens 60&5 tens 45%

Slaw Cutters—See Cutters.**Snaps, Harness—**

German 40&10&10%
 Covert Mfg. Co.:
 Derby 30&2%
 High Grade 15%
 Jockey 35%
 Trojan 45%
 Yankee 30&2%
 Yankee Roller 30&2%
 Covert's Saddlery Works:
 Crown 60%
 German 60%
 Model 60%
 Triumph 60%
 Oneida Community:
 Harness Snaps, 1 inch 60&5%
 Swivel Snaps 60%
 Swivels 50%
 Sargent's Patent Guarded 65&10%

Snaths—

Scythe 50%

Snips, Tanners—See Shears.**Spoons and Forks—****Silver Plated—**

Good Quality 50&10&60&5%
 Cheap 60&10&60&10%
 International Silver Co.:
 1847 Rogers Bros. and Rogers & Hamilton 40&10%
 Rogers & Bro., William Rogers 50&10%
 Eagle Brand 60%
 Anchor, Rogers Brand 60%
 Wm. Rogers & Son 60&10%

Miscellaneous—

German Silver 60&10&60&5%
 Cattaraugus Cutlery Co

Hindustan No. 1, R. g. lar. 10 lb 8¢
Hindustan No. 1, Small. 10 lb 10¢
Axe Stones (all kinds) 5 to 10 lb 10¢
Turkey Oil Stones, Extra, 5 to 10 lb 10¢
Queer Creek Stones, 4 to 8 in. 10 lb 10¢
Queer Creek Slips, 4 to 8 in. 10 lb 10¢
Sand Stone. 10 lb 10¢

Scythe Stones—

Chicago Wheel & Mfg. Co.
Gem Corundum, 10 in., \$8.00
gro., 12 in., \$10.00
Norton Emery Scythe Stones:
Less than gross lots. \$9.00
One gross or more. \$7.20
Lots of 10 gross or more. \$6.00
Pike Mfg. Co., 1901 list:
Black Diamond S. S. 10 lb. \$12.00
Lamouille S. S. 10 lb. \$11.00
White Mountain S. S. 10 lb. \$9.00
Green Mountain S. S. 10 lb. \$8.00
Extra Indian Pond S. S. 10 lb. \$7.50
No. 1 Indian Pond S. S. 10 lb. \$7.00
No. 2 Indian Pond S. S. 10 lb. \$6.50
Leader Red End S. S. 10 lb. \$4.50
Quick Cut Emery. 10 lb. \$10.00
Pure Corundum. 10 lb. \$15.00
Crescent. 10 lb. \$7.00
Emery Scythe Riffes, 2 Coat, \$8
Emery Scythe Riffes, 3 Coat, \$10
Emery Scythe Riffes, 4 Coat, \$12
Balance of 1904 list 3 1/2%

Stoppers, Bottle—

Victor Bottle Stoppers. \$9.00
Stops—Bench—

Millers Falls. 15 and 10%
Morrill's, No. 1, \$10.00. 50%
Morrill's, No. 2, \$12.50. 50%

Door—

Chapin-Stephens Co. 60 and 10%

Plane—

Chapin-Stephens Co. 20%

Straps—Box—

Cary's Universal, case lots. 25 and 20%

Hame—

Covert's Saddlery Works. 60 and 10%

Stretchers, Carpet—

Cast Iron, Steel Points, doz. 60 and 10%

Socket. 10 lb. \$1.00
Excelsior Stretcher and Tack Hammer Combined. doz. \$6.00. 20%

Strops, Razor—

Star Diagonal Strop. 25%

Stuffers, Sausage—

Enterprise Mfg. Co. 25 and 7 1/2%
National Specialty Co., list Jan. 1, 1902. 30 and 5%

Sweepers, Carpet—

National Sweeper Co. doz. \$12.00
Plated. \$12.00
Hepplewhite, Roller Bearing. \$72.00
Ver Plated. \$72.00
Sheraton, Roller Bearing, N'kel. \$60.00
Ye Mission, Roller Bearing, Oxidized Copper. \$36.00
Transparent, Roller Bearing, Plate Glass top, Nickel. \$36.00
National Queen, Roller Bearing, Fancy Veneers. \$37.00
Loyal, Roller Bearing, Nickel. \$25.00
Triple Medal, Roller Bearing, Nickel. \$24.00
Marion, Roller Bearing, N'kel. \$24.00
Marion Queen, Roller Bearing, Nickel. \$24.00
Monarch, Roller Bearing, N'kel. \$22.00
Monarch, Roller Bearing, Jap. \$20.00
Perpetual, Regular B'rgs, N'kel. \$20.00
Perpetual, Regular B'rgs, Jap. \$18.00
Monarch Extra (17 in. case), Roller Bearing, Nickel. \$36.00
Monarch Extra (17 in. case), Roller Bearing, Japanned. \$33.00
Auditorium (25 in. case), Roller Bearing, Nickel. \$34.00
Mammoth (30 in. case), Roller Bearing, Nickel. \$60.00

NOTE—Rebates: 50¢ per dozen on three dozen lots; \$1 per dozen on five dozen lots; \$2 per dozen on ten dozen lots; \$3.50 per dozen on twenty-five dozen lots.

Streator Metal Stamping Co.:
Model E, Sanitaire. doz. \$25.00
Model A, Sterling. doz. \$25.00
Model B, Sterling, Nickel. doz. \$25.00
Model B, Sterling, Japanned. doz. \$25.00
Model C, Sterling. doz. \$21.50
Model D, Sterling. doz. \$19.50

Tacks, Finishing Nails, &c.

New List, May 1, 1905.

American Carpet Tacks. 90 and 10%

American Cut Tacks. 90 and 10%

Suedes Out Tacks. 90 and 10%

Suedes Upholsterers' Tacks. 90 and 10%

Gimp Tacks. 90 and 10%

Lace Tacks. 90 and 10%

Trimming Tacks. 90 and 10%

Looking Glass Tacks. 65%

Bill Posters and Railroad Tacks. 90 and 10%

Hungarian Nails. 85%

Finishing Nails. 70 and 10%

Trunk and Clout Nails. 80 and 10%

NOTE—The above prices are for Standard Weights. An extra 5% is given on Medium Weights, and an extra 10% is given on Light Weights.

Miscellaneous—

Double Pointed Tacks. 90 and 5 or 6 tens

Steel Wire Brads, R. & E. Mfg. Co.'s list. 50 and 10%

See also Nails, Wire.

Tanks, Oil—

Emerald, R. M. Co. 30-gal. \$3.40

Emerald, R. M. Co. 60-gal. \$4.25

Queen City, R. M. Co. 30-gal. \$3.65

Queen City, R. M. Co. 60-gal. \$4.50

Tapes, Measuring—

American Asses' Skin. 59 and 5%

Patent Leather. 25 and 5%

Steel. 33 1/2 and 5%

Chesterman's. 25 and 5%

Eddy Asses' Skin. 40 and 10%
Eddy Patent Leather. 25 and 5%
Eddy Steel. 40 and 10%
Keuffel & Esser Co.:
Favorite, Ass Skin. 40 and 10%
Favorite, Duck and Leather. 25 and 5%
Metallic and Steel, lower list. 35 and 5%
Pocket. 35 and 5%
Lufkin's:
Asses' Skin. 40 and 10%
Metallic. 35 and 5%
Patent Bend, Leather. 25 and 5%
Pocket. 40 and 10%
Steel. 35 and 5%

Teeth, Harrow—

Steel Harrow Teeth, plain or headed, 1/2-inch and larger. per 100 lbs. \$2.75 to \$3.00

Thermometers—

Tin Case. 80 and 10% to 80 and 10%

Ties, Bale—Steel Wire—

Single Loop. 80 and 10%

Monitor, Cross Head, &c. 70%

Brick Tiles—

Niagara Brick Tiles. 54 and 10%

Tinners' Shears, &c.—

See Shears, Tinners', &c.

Tinware—

Stamped, Japanned and Pieced, sold very generally at net prices.

Tips, Safety Pole—

Covert's Saddlery Works. 60 and 10%

Tire Benders, Upsetters, &c. See Benders and Upsetters, Tire.

Tools—Coopers'—

L. & I. J. White. 20 and 5%

Hay—

Myers' Hay Tools. 50%

Stowell's Hay Carriers. 50%

Stowell's Hay Forks. 50%

Stowell's Fork Pulleys. 50%

Miniature—

Smith & Hemenway Co.'s. 25%

Saw—

Atkins' Cross Cut Saw Tools. 40%

Simonds' Improved. 33%

Simonds' Crescent. 25%

Ship—

L. & I. J. White. 25%

Transom Lifters—

See Lifters, Transom.

Traps—Fly—

Balloon, Globe or Acme, doz. \$1.15 to \$1.25; gro. \$11.50 to \$12.00

Harper, Champion or Paragon. doz. \$1.25 to \$1.40; gro. \$13.00 to \$13.50

Game—

Imitation Onocida. 75 and 5%

Newhouse. 15 and 5%

Hawley & Norton. 70 and 10%

Victor. 70 and 10%

Onocida Community Jump. 50%

Mouse and Rat—

Mouse, Wood, Choker, doz. holes 8 1/2 and 9¢

Mouse, Round or Square Wire. doz. 85 and 90¢

Marty French Rat and Mouse Traps (Genuine):

No. 1, Rat, each \$1.21; doz. \$13.25

No. 3, Rat, doz. \$6.50; case of 50 \$5.75 doz.

No. 3 1/2, Rat, doz. \$5.25; case of 72 \$4.70 doz.

No. 4, Mouse, doz. \$3.55; case of 150 \$3.00 doz.

No. 5, Mouse, doz. \$3.00; case of 150 \$2.25 doz.

Trimmers, Spoke—

Wood's E I. 50%

Trowels—

Diston Brick and Pointing. 30%

Diston Plastering. 25%

Diston Standard Brand and Garden Trowels. 35%

Kohler's Steel Garden Trowels, 5 in. 5 in. \$4.50

Kohler's Steel Garden Trowels, 6 in. 6 in. \$6.00

Never-Break Steel Garden Trowels. 50%

Rose Brick and Plastering. 25 and 5%

Woodrough & McParlin, Plastering. 25%

Trucks, Warehouse, &c.—

B. & L. Block Co.:
New York Pattern. 50 and 10%

Western Pattern. 60 and 10%

Handy Trucks. 40 and 10%

Grocery. 40 and 10%

Dairies, Store Trucks, Improved. 40 and 10%

McKinney Trucks. each \$10.00

Model Store Trucks. 40 and 10%

Tubs, Wash—No. 1 2 3

Galvanized, per doz. \$4.25 4.75 5.25

Galvanized Wash Tubs (R. M. Co.):

No. 1 2 3 10 20 30

Per doz., net. \$5.70 6.30 7.20 6.50 7.20 8.10

Twine, Miscellaneous—

Flax Twine: BC. B.

No. 9, 1/4 and 1/2-lb. Balls. 22 and 24¢

No. 12, 1/4 and 1/2-lb. Balls. 18 and 20¢

No. 18, 1/4 and 1/2-lb. Balls. 16 and 18¢

No. 24, 1/4 and 1/2-lb. Balls. 16 and 18¢

No. 36, 1/4 and 1/2-lb. Balls. 15 and 17¢

Chalk Line, Cotton 1/2-lb. Balls. 25 and 30¢

Cotton Mops, 6, 9, 12 and 15 lb. to doz. 10¢ and 15¢

Cotton Wrapping, 5 Balls to lb., according to quality. 14¢ and 20¢

American 2-Ply Hemp, 1/4 and 1/2-lb. Balls. 13 and 14¢

American 3-Ply Hemp, 1-lb. Balls. 13 and 14¢

India 2-Ply Hemp, 1/4 and 1/2-lb. Balls (Spring Twine). 9¢ and 10¢

India 3-Ply Hemp, 1-lb. Balls. 9¢ and 10¢

India 3-Ply Hemp, 1 1/2-lb. Balls. 7¢ and 8¢

S, S, J and S-Ply Jute, 1/2-lb. Balls. 6¢ and 10¢

Mason Line, Linen, 1/2-lb. Bla. 4¢

No. 26, Mattress, 1/4 and 1/2-lb. Balls. 3¢

Wool, 3 to 6 ply. 1. B 6¢; A 6 1/2¢

Vises—

Solid Box. 60%

Parallel—

Athol Machine Co.:
Simpson's Adjustable. 40%

Standard. 40%

Amateur. 40%

Columbian Hdw. Co. 40%

Emmert Universal:
Pattern Makers' No. 1, \$15.00; No. 2, \$12.50.

Machinist and Tool Makers' No. 1A, \$12.50; No. 5A, \$7.00; No. 6A, \$10.00; No. 10A, \$2.50.

Presto Quick Acting. 25 and 5%

Tiger Machinists'. 40%

Fisher & Norris Double Screw. 15 and 10%

Hollands':
Machinists'. 40 and 45%

Keystone. 65 and 70%

Lewis Tool Co.:
Adjustable Jaw. 30%

Monarch. 50%

Solid Jaw. 50%

Massey Vise Co.:
Clinch. 40%

Regulars. 20 and 25%

Yuan's. 40 and 45%

Combination Pipe. 55 and 60%

Prentiss. 20 and 25%

Sargent's. 40%

Snediker's X. L. 33 1/2%

Stephens. 33 1/2%

Williamson Mfg Co. Double Swivel. 40 and 5%

Saw Filers—

Diston's D 3 Clamp and Guide, doz. \$30.

Perfection Saw Clamps, doz. \$4.50

Reading. 60%

Wentworth's Rubber Jaw, Nos. 1 2 and 3. 45 and 50%

Wood Workers—

Massey Vise Co.:
Lightning Grip. 15%

Perfect. 15%

Wyman & Gordon's Quick Action, 6 in., \$6.00; 9 in., \$7.00; 14 in., \$8.00.

Miscellaneous—

Signal & Keeler Combination Pipe Vise. 60 and 10%

Holland's Combination Pipe. 60 and 65%

Massey's Quick Action Pipe. 40%

Parker's Combination Pipe:

8 1/2 Series. 60%

15 Series. 60%

No. 870. 40%

Williamson Mfg Co. Double Swivel Combination Pipe. 40 and 5%

Wads—Price per M.

B. E., 11 up. 60¢

B. E., 9 and 10. 70¢

B. E., 8. 80¢

B. E., 7. 80¢

P. E., 11 up. \$1.00

P. E., 9 and 10. 1.25

P. E., 8. 1.50

P. E., 7. 1.50

Ely's B. E., 11 and larger. \$1.70 to \$1.75

Ely's P. E., 12 to 20. \$3.00 to \$3.25

Ware, Hollow—

Cast Iron, Hollow—

Stove Hollow Ware:

Enameled. 55%

Ground. 60%

Plain or Unground. 65%

Country Hollow Ware, per 100 lbs. \$2.75

White Enameled Ware:

Maslin Kettles. 70%

Covered Ware:

Tinned and Turned. 40%

Enameled. 50%

See also Pots, Glue.

